NEWS IN BRIEF Home market 'in billions'

DEVELOPMENTS in home computers and vidco tape recorders could lead to the emergence of a new billiondollor market for integroted Vidco Terminals which might eventually be dominated by companies like Texas Instrumenis and IBM rnther than by current home computer and television manufacturers.

According to a study by the IVI will integrate the hunte telephone, TV set, personal computer and video tape recorder and will bring obout significant changes in the publishing, consumer electronics, broadcasting and tclecommunications industries.

The study, The Home Terminal, is published by international Resource Development Inc, of I25 Elm Street, P.O. Box 1131, New Cannail, Connecticut,

laxmen's fear

CONCERNED that a change in the tax collecting system and the introduction of computers may rasuit in the losa of jobs and career paths for its members, the Inland Revenua Staff Federation is calling a special delegate conference next week. The federation says concentration of work at computer centres is resulting in loss of joba in local offices and the federation wants to cstablish the right of its members to Jobs resulting from transfer of work-loads.

DEC double

A ONE Megabyte double density floppy disc subsystem has been introduced by Digital Equipment for use with PDP-8 and PDP-11 minleomputars.

the boot ... Wigan

housewife grateful for it!

Penny & Giles data cartridge direct function and low cost replacement for the paper tape punch has pleased Wigan louaewife Hilda Birtwhiatle (32) who aaye aho a very grateful

Cincom gives details of next generation of DBMS

system Total, Cincom Systems, has announced details of its nost generation of DBMS software, the main fostures of which ore and-user orientation and a new lovel of environmental independence.

The system, ceiled Total information System, Ti9, provides high level facilities for all eepects of information menegament. These sre implemented by a user-oriented superstruc-ture on top of traditional D9M9 software.

The key component of the system is a date directory, which links the superstructure to the underlying database. The TIS directory, in effect on ective deta dictionery, permits beti and users and applications programs to take a database updating, and facilities for com-

In its first release, due next year, TI9 will include facilities for creating and mointaining the directory on well so initial versions of two of the four main superstructure components. Those will be components for information retrievel and detebase management.

To be implemented initially for 19 M main-fremes, the nystem will include a DOM9 component, e modified form of the lotget 19M 350/370 version of Total, Release 9.0 (CW, Juno 15). This is described by Cincom os the "engine" which will drive TIG.
The system will later offer two further groups of facilities; an end uses leaves to facilities; an end uses leaves for

groupe of facilities: an end user language for

The compony, which describes TIS as "the rectes breakthrough in systems coftwere o mojor presentation on the system at a usere' group meeting in its houns town, Cincinnati,

maintenence system and the online query lenguege, which hee bean under development

for over two years.

Raceived with anthusiesm by the usero et the meeting, the TIS ennouncement was seen by many es countering increesing 19 M emphasis on its strategic software line, IMS and MVS.

£40 m from NEB to back According to a study by the US consultancy International Resource Development Inc, the IVT will integrate the hante

selling Unicom.

Stephen Dawson, the NEB's

man dealing with this area,

could not confirm any specific

plana, other than the overall aim

and the fact that talks are taking

place. He agreed that the real

electronic office la atili o long way in the future, but he added,

"There is a lot of business to be

Later on the NEB is expected

to sell Logica's projected clust-

International

ORDERS for several hundred

supnemerknt chnck-out thrminols and related back-up sys-tems could result from a year's

rial being carried out by the

dona in the magntime

ered ayatem, VTS/400.

AN Investment of £40 million is micro (CW, June 1). The hardto be made by the National Enterprise Board in a new venture, entirely by Logica. The machine into the advanced office systems | was originally intended on a market, and to alart off its communicating terminal for activities, the NEB is to take over worldwide marketing of Logica's recently announced siand-alone word processor.

Communicating terminal for processing system, but is now being sold separately as well.

The NEB's plana are to set up a marketing organisation for "Office of the Future" systems along similar lines to Insac, the software consortium. Advanced office information systems incorporating word processing, electronic filing, and electronic mail are seen as a growth area of enormous potantlal, in which the UK has a chanca of getting a worldwide laad.

Among foraign companies, Xerox in particular is known to be working on davelopment of these systems, but is still some

way from the markatplace.
The new organization, as yet unnamed but known jocularly in the Industry as "Intrsy", will draw on the expertise of UK systema houaea, particularly Logica, but possibly including Systime, and also minicomputer

manufacturerers auch aa CTL. Logica'a VTS/100 la an up-market acreen word proceawith communications facilitisa, based on the Intel 8080

ntnmational grocery chain, subsidiery of the Gritish Amori can Tobacco group.

This week the letest step in the pilot project wont into operation at Folkestone whore 19 19M 3660 terminals are in-Penny & Giles give stelled with en enline link to ISM's Warwick dets centre to paper tape punches

provide back-up. sgoinet en upgradnd NCR 255 Installetion et International's Weymouth supprestors in Dor-

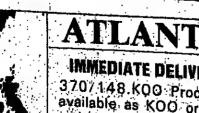
BOC goes for 2976

THE big BOC Dataaolya bureau The bureau ia also implemenhas changed its mind about a ting a system that anables users to access concurrently the 2070. atead raplace its existing 2970 and the IBM and Amdahl with the new 2978, running mainframes at its Sunbury-on-under the 5X32 release of the Thames centre via an ICL 2904

VME/B operating system.

The 2976 is effectively a 2972 with interleaved main memory, Midland Bank in New York, to and incorporates the sama order talk to both its IBM 360s in the code processor as the 2980.

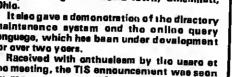
970, and will in- to access concurrently the 2970 US and 1900s in London.



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Classic THE low-cost OEM version of Mindeonip's new Classic line of minicomputers has been for mally announced as the Classk

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reguments

Followed by question to all fighter throughout the second of the second

Low-cost

The mini, priced at £2,260 as a single-board processor with 32K-words of MOS memory, and C5.200 parkaged in a chassis with power supply, effectively replaces the Modcomp II, featuring the full instruction set and rinning under MAX II and MAX III operating systems.

Modernup has configured a thexitate plant control and data acquisition system around the new mini, Called Modses III, the system is designed as a multiprocessor distributed plant control system, and cach unit ran monitor up to 2,048 control

The basic unit Includes 7810 processor, computer to computer communications link, a direct numbery processor, and (O) controller, and costs [5] 🐙

GCA criticised by MPs

FOLLOWING the Auditor-General's criticism of ICL (CW. Feb 23), the House of Commons Public Accounts Committee has unticlsed the government's Central Computer Agency forfalling in Inform Ministers adequately alimit the likely idilitional costs to the tuxpayer of buying un-Irled 2000 muchines under the preferential procurement policy.
This the committee described

us "n ungation of sound admin-Istration."



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Briefing

Taxmen call off action

A THREAT to the continued processing of PAYE at the in-and Revenue computer centre R Cumbernauld, Scotland, has been everted, following a deci-don by the inland Revenue Stuff Federation not to step up action a dispute with the inland Revenue over union representa-

ton. The Inland Revenue Bourd wants its 200 staff that work with computers to be free to leave IRSF and join the Suciety of Civil and Public Servants.

Chairman resigns

DR Bill Willetts, chairman of Plessey Telecommunications, and a member of the Plessey heard, is resigning to become an assistant manoging director of Vickers. Last month, Des Pitcher, formerly with Univac and most recently managing fresher of Lephard Vehicles was appointed managing director of Plessey Telecommunications (CW, September 14).

Meanwhile neither Plessey nor GEC has anything further to addiolast week's statements on the possibility that Plessey Semicoeductors might be bought by GEC (CW, October

BUS lalks

THE British Computing Society is to discuss this week a report on the future requirements of DP underteken earlier this year by the BCS future requirements committee (CW, April 6), The committee has been critical of the failure of the BCS to publish the report or to take its findings into account in this anciety's fulure pisnologs and it is imperi to go live. sssoss future nellon nil the report at this week's menting, which takes place after Cam-puter Weekly has gane to press.

fricing trials

PROPOSALS from mokers uf data collection equipment are how being sought for hardwore for the experiment next your nn computerisation of the Proscriplion Pricing Authority (CW, March 2). The computerisation Project, run jointly by the DHSS and the PPA, is to run trinks of different ways computer systems could help in the ossess-ment of chemiats' costs, and staff have decided that one of three methods of data capture will probably be used: kay to disc, bar codes and light pans, or m intersctive system using intelligent terminals,

Ariel new chief

Affel, the computer-based stock dealing system for institutional investors, is to be Garry Arnott, a consultant with N. M. Rothschild, who will succeed Colling Leach, Lesch, who was largely presponsible for setting up the system, resigned at the end of lest month (CW, October 5). In the last financial year, Ariel leschild, profits of £104,000 tompared with a loss of £87,000 pany. To mark this stocks with 100 million, up from £84 series; the possible to make the less of £87,000 pany. To mark this 30th series less million last year. MEW managing director of TEN YEARS' HARD

'Lucky 13th' Charity Ball raises £1,000

bo a lucky day for those strending the litril annual Computer Wookly Charity Ball in London. The ball coincided with the calabration by the British Computer Saciety of its 21st birthday and the new 9CS prosident, Profnasor Frenk Sumner

of Menchester University iright| got his year of office off to a pleasant start when he cut the birthday cake shortly efter creating awareness in schools of the use

midnight of computers.

Over £1,000 was reland by the bell, which was attended by more than 700.

The money will be ellocated to one or a 15/17) and Sintrem (back page).

The machines that would be

used at North Western Gas are

reportedly two Adler Tasa 600S

units - screenless word proces-

sors that use magnetic cassetter

for storaga. It la quastionabla

whether experience with them

could be applied to a large-scale

contralised ayatem auch as the

Turn to page 22

In charga of office aervicea at

Infant Secimos

'strangled'

THE Infent Franch netional

enmioonductor compnny sncknoe, similar to the NEG's inmos, has been atrangind nt birth, and the French industry ministry now favoure bilateral links between French and US

links between Frenzh ond US compenies. Thomson is to develop sewnral different bipolar semiconductor familias, and is liknly to buy technology from Motorols, Metra and Herris are discussing colinbomtion (ann Micro Naws, page 14) and GCS with Intel, and Seint Gobnin with National Semiconductor

are other likely partners.

Gas WP plans wait for unions AMBITIOUS plans are being put forward for a lorge shared-logic word processing system at

the Solibull headquarters of West Midlands Gas, including links to a mainframe, a phototypesetter, and o microwave communications circuit. But before the plans can go forward, union consent must be obtained, and the lack of any agreement at national level on the stuffing implications of WP means implementation will probably be held up for many months. discussed with unions next

An order his been pisced with

AES Wordplex for a 21-ststion

screen-huseil system, conditio-

nal on the union's ugreeing tn

the plan. This quipment would

replace a large number of UDS

puper tape mochines that have

been in use at Weat Mid-

lands Gas for some years for

the production of standard let-

West Midlands Gas has sent a

letter to the district office of the

Notional and Local Government

Officers Association, to which

the typists belong, proposing

that the Wordplax systom be put

in immediately, with any extra

pay that la subasqueutly

negotiated being paid retroapec-

Union officiala are indicating

Noigo officiala ot notional

lovol ara rocommanding thet

nothing be dona until tha reaults

have been made known of o pllot

WP schome at North Weatern

Gas, however, this scheme has

not yet even started. A proposal

for a three-month trial la to be

According to North Western

that thay are most unlikely to

ters to customers, onil the like.

System failure hits company

A LACE of communication between the Scan horean and its former client, the Credit and Commerce Insurance Compony. has been blanned by both porties for the complete fallure of a syslem operated by Scan for the

lusurance firm. Senu, part of the ORC Graup, sturted developing the policy maintenance system for Credit and Commerce in January and, according to Scun's manuging directur, Peter Corke, problema started in April when the systom was partially insulcamented and was starting to

Carke told Computer Weekly tint the problems were caused partly by a lack of communicathe lack of a sufficiently wall

Turn to page 22

Wordwright may go out of business ANOTHER victim of the in-

cronsingly hot competition in the crowded word processing market is expected to be Wordwright, the supplier of sharedlogic systems and buresu servicas.

Confirming that Wordwright was likely to go out of business, s spokesman sald that the persnt company, British Printing Corp, was raviswing its

The firm offered either shared which was adapted from the logic screen word processing Commons Adhoc system logic screen word processing Tames Taylor, who wrote systems, or a bureau service for storage hardware. Wordwright software,

policy on word processing, but was one of the pioneara in the would probably not make a de-finite decision until the end of from a word processor.

Also running on Wordpier's bureau machine la an information wordprocessor.

BPC has been thinking of selling Wordwright for some time.

those who did not went to invest both, is now looking for enother lo their own processor and bureau on which to mount his

COMPUTER WEEKLY'S INSIDE NEWS

DATABASE DESIGN

tile, but one that could pay off the man by the sales of the sales of

DATAMASE DESIGNATION OF AN appellation of a special to a support of the product o

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appointments

IBM drops plan for Manchester centre

FOLLOWING rejection by Traf- new atart looking again for ford Borough Council of IBM'a alternative sites in the area. planning application for a large markating aupport cantra at Bowdon, near Manchester, the company has abandoned the

Local opposition was fierce to tha proposed 20-acre davelopment for a large office building, which it was claimed would have ancroached on a Green

IBM wants a new building for 400 sales and aales aupport ataff for its Northarn region, and will place," he said.

Eddia Nixon, UK managing

director, said the company much regretted having to withdraw. "Wa were firmly of tha view that we would have been able to

maka a major contribution to tha local community and environment. Had wa not been givan the clear indication that ve would find support for this view, we would not have lodged tha application in the first

You cantella computer system w the companies it keeps

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Note Systems Designer
Hilds tells us she's a data systems
designer for the Cygnus deep space
project and she was worried about
noise, show data rate, reel storenge,
and basing data but now that she
has specified Penny & giles 2700
ECMA46 compatible mag tape store
she has fully automatic loading,
store capacity of 400k hytes oper
cartraiget fully asynchronous serial
or parallel data transfer, high data
integrity and silent operation so
she's touch happier. While she
cooked the old man's test Hildswede cooked the old man's ten Hildawrate a n consideration to NASA because the nderfaces on the Penny & tilles 2700 make it suitable by direct replacement in existing installa-tions. They nuglit to know, she said.

Penny & Gilsa Data Recordare Limited

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ile Syetoms Designer

Hilda chose Penny & Giles 2700 for the Cygnus deep space timed luck with the housework Bildn

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one year old.

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after death and the latest scientific and technical develop-

the London Planetarium with a messago to the year 2000 are astronomer Patrick Moore (left) Pulrick Moon told Cumputer and psychologist, computer Weekly he believed computers would be "crurlal" in defining scientist and regulor contributor to Computer Waekly, Dr Chris the kind of world there will be when the time eapsule is openoi in 22 youra' tluic.

Dr Evana and Moore are contributing editora to Omni, a new Further infurmation about magazina thot, like Computer Omni can be obtained from 2 Wcekly'a Futuraviaw scries, Brnmber Roul, London W14.

provides a look at the impact of echnological devalopments. The time capaule was sealed at the UK launch of Omni. It containe lettera to tha future from

various British science corres-pondents, ond copies of the October 4 Isaues of Tha Timea and Tha Sun. The first issue of Omni, prica

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each west of over \$2,000 locitating the highest tully requested circulation in the 5K. The left shalloned edition, which is published in times a year, has a circulation of ever \$4,006.

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FARNBOROUGH

This is not to say that every-

But evary company in the

computar business has also

faced difficult, often unre-

growing s profitable commercial

business in an industry charsc-

terised by an unprecedented rate

of technological change, an ex-

plosion in ussge and complaxity

Unfortunately, too many

British people, including many

journalists who should know

bstter, take s positive delight in

making glib, superficial jeers at

However, snyone doing so in

the computing business ehould

Implementation.

Britain can be proud of the ICL story

tenth birthdsy, but the ICL story wide representative. goea back much further, encompassing most of the bast of thing in the ICL garden has British computing. been, is or will be completely

There are many British mile- rosy. stones in the history of world computing, such as the Colossus wertime cods breaker, the Cambridge University Edsac and the acived, problems in coping with University Manchester the mansgament battle of machinea ilks Muse.

The development of the Manchester machines encapsulates the most auccessful theme in the history of British computing, which is a synthesis of intellectual Innovation, imaginstive government investment and commercial courags.

As early as 1945, the British government funded s contract which ensbied Ferrenti to produce a commercial version of the Mancheeter University

In 1958 the government- profitably in the mainframe more to come. backed NRDC gave £300,000 to help Ferranii turn Muse into Atlas, which implemented virtual storage well over e de-csde before IBM "announced tomorrow" in 1972 when it introduced VS on the 370 series.

And this is only one brench of the fCL family tree that also includes such commercial computing pioneers as Leo, Power-Sames. British Tabulating Mschines, etc. etc. etc.

Outside the US there la no other country that can match tha British achievaments in computing, of which fCL has

INTERRUPT

THERE was once a computer site which ran two different operating systems at different limes during the day. Changing from one system to the other was quite simple.

That meant restoring all filea of

the one system and one pack of

nevar tested their tape reatore

procedure properly, and it took

both sets of files were fully res-

tored and normal working could

the best part of a week before

Unfortunately, this sits had

By far the thickest (in content) is the annual presentation of the Computer Users Year Book. Few source listings are anslysed so intently, few com-What the operator had to do piles have auch overall installawas bring the system to e tion appeal. However the Instalquiescent state and stop the ation team is unlikely to get a CPU, then stop and axchange look in — or at — the survey the system disc packs and boot until the DPM has made a close the other system. One doy the operators made the mistake of study of his own salary levels. For the DPM this exercise is not exchanging only two of the three system packs. By the time the system had finally crashed, so easy, pay scales being tabulated under national the three packs were so badly averagea, regions, installation size and budgets. corrupted that a tapa restore was the only possible solution.

tast closs.

This is the time of the year when surveys arrive thick and

fast and auddenly it becomes of

critical interest to discover

Diligent research reveals that fortune, if not fama, is to be found in London in a large instsllation. Some 15% of those in this category can expact pay levels of flik plus, though whether those who qualify will have time or energy to enjoy the

lavish rewards is not listed. Losers in the pay atakes are those DPMs working in installations of under 25 employees with

computer business while household names like General Electric, Xerox, RCA end Philips heve withdrawn; and thet once much-mooted Eurodream, Unidata, is nothing but a footnote in the computer history books.

As In Fred Lamond's personal critique of ICL's product strategy (pages 16, 17), Computer Weskiy haa always been prepared to provide serious, informed criticism of ICL. But that criticism has always been balanced by placing it in a wider

And It is within wider historical, technical and commerclai perspectives that the achievements of ICL and the people who have contributed to its growth can be viewed with a at deal of British pride.

We therefore wish ICL a very happy birthday, with the hope bear in mind that ICL still trades that there will be many, many

It pays to study these figures

the ultimate rewards.

whether you are in the thick or to be informed that 42% of DP

were chollenged. It is of interest

cars - especially if you are one

of the remaining 58%. But

whether this data will impress

the managing director is uncon-

firmed, particularly if aven the

company accountant docs not

enjoy such perks of uffice. The

survey does not reveal whather

those DPMs who do qualify are

involved in diatributed net-

works, late shift working or ure

located in remote country areas.

those factors which influence

pay scales. It is increasingly

dividual employer who sets the

scales, not the DP industry. In

particular, the Stale Industrics

go their own way, slotting DP personnel into existing grades

with scant regard for general DP

Likewise working in DP

operations in the banks, Post

Office and Civil Sarvica is far

pay levels.

evident that it is now the in-

Similarly uncharted ure

employment' exploded by study THE much-discussed threat to changeover in the malastresm now being contradicted by

Micros 'threat to

employment in this country is of pranufacturing industry world be a slaw pracess. resenrehers working on the \$1.5 The changeover will happen milling Arthur D. Little study on

eventually, however for, accorthe subject (CW, October 12). ding to Ross, their research has Chrls Crozler of Cambridge brought to light some interes-Consultants, reinland by ADL to ling facts. look into patential micraelec-"In manufacturing industry, we have found that technology tronics applientions in minnufocturing and testing, with is not putting people out of Molcola Russ of ADL's Puris work. People don't want to work in manufacturing any more, so office, has found little evidence to suggest that new techniques technological developments are

going to be needed to maintain factury gates. levels of production." "There is a general conser-In administration, highlighted by the Science Policy Research Unit's independent report for vatism in Industry in the wny that microelectronics is opplied," he said, "Current the Department of Industry epplications effort is being (CW, October 5) as the area directed towards emulation of where most unemployment existing manufacturing techniwould uccur, the pair predict ques and processes, ruther than that this is in fact unlikely.

Here, they say, the number of Certainly there will be innopeople required in administravative applications, but Crozler tion to evaluate, and operate sees these as being of minor from, information will expandss importance in industrial terms fast as any system's capability to - such things as microproduce infurmation. controlled light switches. Any

The ADL study is due for presentation next February. To late, 45 clients have signed up for their \$25,000 copy.

The report will be split into three phases, defining respectively where the technology is going; potential business opportunities in such areas as the automotive market, the home, the office and manufacturing.

Much of this work will also be related to the societal and demographic trends which will shape the overall markets. This itself has thrown up some interesting developments, such as the mediction that in ten years time, 30% of West German households will consist of just

Wilkes

summer holidays over than the The median pay according to DPM has to change his focus. the CUYB is £3,038, somewhat job with British Airways or Replacing the joys and delights of the Club Mediterranee come supervisor (£3,147). No doubt it Railways, for example, entitles employees to substantial travel the annual salary facts, figures is the preparation which pays For the DPM monitoring the pay scales is becoming a full-It is perhapa about time that time tosk, if only to help puy for the relevance of aslary aurveys managers now have company

will push humanity out of the

anything truly innovative."

TERMINALS Nowbury Linbs' latest range of British VDUs. From £495 High speed, papor-tapo roadas punch. i roin £995 Now T-1612 160 c.p.s. bl-directional koyboard printor. Wido rango of othar Tally printors niso availabla. From £1935 LA36 DECwriter II From £865 LS120 DECwriter III From £1995 digital ASR DECwriter ff incorporating digilal paper-tapa reader punch. From £1860 Acoustic coupler. From £210 LA180 DECprinter I From £1600 SYSTEM8 LSf-1 f Modules - sx stock. PDP fI-03 with order processing/stock control purchase ledger, sales ledger, nominal ledger. From £13950 Wilkes Computing Ltd. Bush House, 72 Prince St., Bristol.

Mechanical muscle for disabled

DESCRIBED as "a breakthrough in mechanical aids for the disabled" by the Surrey Area Health Authority, the mechanical arm to the picture is cap able of carrying out a series of delicate movements ornier the control of someons with ou muscle movement

As such it is different from other mechanical arms currently available. which depend on some nanscle movement and ore consequently useless to hasks involved are extremely simple. anyoneparalysed from the nerk down.

The difference lies in the use of n arm. The first is to hold a stick in the meroprocessor, which not only makes mouth (as Dr Todd is doing in the such a device possible but also compicture) and use it to press control mercially viable.

The intero used is a 7.80 supplied by particular movements.

Nascoul, but Dr Juckson Todd uf The other method is Uneen Mary College, leader of the light source is strapped on to the head team which developed the arm, told of the paralysed person, who then Committee Weekly that the type of points it at a menu of pre-programmer miero is Irrelevant, as the computing tasks displayed on a VDU, in much the There are two ways of operating the lightpen.

buttons pre-programmed to activate

The other method is more flaxible. A same way as sn ordinary person uses a

of sites for routine check-out, aervice contract for mainte- stsy on out of hours.

now considering cities in the made during the hours covered

The remote diagnostic system and running sgain; and no extrs

nance which is being introduced

Into Europe this month. Among

the features of DECaarvica are a

guaranteed response time of

four hours, or better if a call is

by the agreement; continuous

service until the machine is up



To axercise tighter manage-

ment control over msintenance,

there is a site management guide

available to the customer, so

that he can see for himself that

the right maintenance is being

based system to keep track of sll

done. There is also a computer-

maintenance done.

for the workers

AS a way of increasing the motivation of the engineers who work for it, Millennium, e recently formed consultency in Hatfield, Herts, is turning itself from a limited company into a workare' co-ownership opera-

Startad a year ago by Roy Hart and his wife, Millennium is now going through the legal formalities to make the change to co-ownership.

"Our best salesman," said Hart, "Is our last customer, and when everyone has a stake in the company, they will all have a stake in maintaining the company's reputation."

Tandem in UK

ALTHOUGH Tandem Computers has been operating in the UK since the beginning of tha year (CW, January 19), it has only now formally announced its presence. Tandem has based its UK aubsidlary in Uxbridge High Street, Middlasox, under mansging director Jack Chap-

Remote diagnostics on DEC large systems Jacquard for \$14 m In the individual street in the control of the street in the individual street in the individual

but that is Illegal in Europe.

"We have not yet chosen the site for the European centre,

which will be equipped with

either an 11/70 or a VAX. We are

UK, Fronce, Germeny and Ben-

ment Corp is introducing online AFURTHER foray by ITT into remote diagnostics for its large the word processing and electronic mail fields now seems computers. At present available only in likely, in the form of a takeover the US, the service is to be inof lacquard Systems of Santa troduced in Europe within the Monica, California, for a next 12 months as part of a new reported \$14 million. This ful-DEC service deal for customers. hws ITT's purchase of printer The system in the US is based maker Qume (CW, September oo a large dual PDP-11/70 in-28) and discussions that have stallation in Colorado Springs been held with Qyx with a view

to marketlag that company's and covers the DECsystem-10 wordprocessor (CW, October 5). and 20 lines, the VAX-11/780 A spokesman for Jacquand and the PDP-11/70. The comconfirmed that discussions were under way, but added that I'll was not the only cumpany intcrested la buying his firm. Jacquard makes small VDU-based business systems with software that allows them to be used for data processing and worst processing simplianeously, on dif

III has further strengthened its resources in affice informa tions systems by hiring Brum Parkinson, a WP expert who used to wark for Diebold. Several other new stuff have been brought in on the companer communications side, including James Frome, formerly chief programmer at IBM, and Wayne

Robbias from Hell Telephone. When ITT becomes firmly established in word processing, it may well have unwanted effects | icr models. only significant rival in the daisy-wheel printer market, Diablo, is owned by Xerox, which makers relacionat to imy their us and Ainduhl is that their sysponters from a competitue could Qume will lose that attraction.

adopted by IBM, Digital Equip-

FALOTTI . . . "e European aer-vice in nine monthe' time."

pany hopes to extand it to smal-

on its newly acquired Quine.
One of Quine's most important selling points has been that its only significant.

"We are planning to open o European service in about nine months," time," Pler-Carla Polotti, European customer sarviews manager, tald Computer Weekly.

tians are so large they can afford always turn to Quane, but when to have an engineer resident IT also becomes a computitor, on-site; our system will be activited by the customer. In the

After that will come a pilot

volving at least 1,500 bookshops

will cost a further \$20 million or

microprocessor based point of sale terminals for recording

sales and orders. Sales will be recorded by light-pans capable of reading bar code or OCR-A labels, while order datails will be

terminal, and will be updated

aulomatically. Each terminal will be police

by the frigram central computer every night to extract the pro-

cesa aales data and ordera

cesa aales data and orders. Orders are then transmitted to the suppliers, and order confirmations printed out on sach bookshop's terminal, sales and lysea inventory listings and the like will be offered as obtions.

The Access systam will use

Software Sciences wins

\$20m book trade order

AN order that could be worth existing computing resources, more than \$20 million over the next five and the second second

from the Ingram Book Compony of America. The order is for the

development of Accesa an in- complete implementation in-

the company will evaluate the future development of Ingram's in the company disca linked to each on thoppy disca linked to each on the company disca linked to each on the com

next five years has been won by impact of Access.

Software Sciences Intarnotional

ventory management and order

processing system for American

fngram's commitment ao far is

for the first phase, and is worth \$250,000. It requires Software

Sciences to provide o detailed

system specification and to de-

velop several eets of prototype terminal hardware and

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NCB. The order is for the

Now, a calculator that's of very little use to 99.9994% of the population.



contact with computors However if you're one of the lacky teaming. then the TI-Programmer is the answer to your prayers For only £ 16.05. They always and Octal Decimal Accumate conversions and calculathous in any of these introduced bases. Thoughte power you can apply oght to the Job, right where the Job is. TEXAS INSTRUMENTS no me gangan where me parts.

Numbur bash conversions: Enter a mandar in base 8, 10 or
16. Then with a touch of a key that rounder is quickly and geografely converted to either al the other in inher bosos. Rosalls appoir fusionly on the Programme's bright, ensy to read LED display. And a convenient mode forficator mesus you always know a hat manher base conte Number has calculations: The Programmer quickly landles arithmeth computations for the all three bases. neithde answers to bharry rempute problems...giving you more time for impolant programming or tradities harding tasks. The Trogrammer has sufficient expublity to handle even HIST 370 problems with ense. And since it uses integer "twa's complement orithmetic in he sades final and or ful bases. nounced: materally, just like a computer does. For anal hose lentures signed floating pant dibinelic for convenience in day-to-day

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calculations. FaC. key provides "unys complement capability in HEX and OCT bases.

The Tl Programmer saves you time with

1) If e block of syalleble memory hagins at address 0.118s and ends at 1100s, bow many bytas may be stored there?
2) You have date blooks stored between the following addresses. How many total bytas of data are stpred? Black 1 Block 2 Block 3 : 2A00

problems like these...

3) What is 70 shifted 2 bits to the laft? Complete the talegon alongs do tricked your direct. PO or Barclayter Acrass number, and mill to Treas Instruments Lid. Supply Division Chalmology Control, 1861 ligh, Street, Bloosts.

Piesse rush me my TI-Programmer/Please send further temillionus englased (c.q.l.a5 lin(p.a.b) choose 10011 Ploase dabil my Barelnycard Account Nu Accuss Account Nu

TEXAS INSTRUMENTS

Technology Centre, 186 High Street, Slough Tel Slough 70591

more remunerative (and securs) This alory has two morals: a budget of less than £100K and dustry and commerce. It would than similar roles in private in-First, it is well to be off with the old before being on with the dividuale are strongly recommanded to regrade as systems the surveys.

In any case doesn't happen, something bad will, so oner or later, and it is where apparently they can longer the main criterion of pay In any case, salaries are no much much better to be precommand flik plus. For opera- Submitted by Cluie Statehall of Meriberough, Wiltehire who gets this week's £9 interrupt prize. Ten years ago... **GOVERNMENT COMPUTING** COMPUTER WEEKLY AFTER 18 menthe' Speration the UK's first commercial computer-based information service, Indets Ltd., hee gene into voluntery the CEGB's 4,000 Megawatt of CEGB's 4,000 Meg OCTOBER 17, 1968 ROYAL AIRCRAFT ESTABLISHMENT Raplacament of the existing date collection — preparellen equipment in the A.D.P. section of the R.A.E., Fernberough, Hempshire with piecessor centrolled keying equipment capable et working both in local mode and in direct communication with a main frama computer -- currently on LC.L. instellation is required around May 1979. Applications for operations requirements quoting CEH — 15 should be sent by 12th November to Central Computer Agency, Room 822 River Walk House, 157-101 Millberk, LONDON SW1P 481

To be launched with a bang

Americens, really are poor sports, aren't they. Nasty people in the US semiconduclor industry, sulking et_ua trying to join their game, ore circulating malicious rumours about the name that they claim is going to be given to inmos's first product. Since it will be designed and menufactured in two different countries, they say it is going to be called est and most expensive 64K RAM. They're just sore becauae we've got a two-year tall start on them.

Talking ebout names for thinga, why do you suppose it is that IBM siways insists on calling things something com-pletely different from what everyone else calls them? Or using the same names to mean different things?

What everyone else calls "distributed computing", IBM

computer that sits on your desk or bedroom table; to IBMera it means something using vast mainframes. One of the latest announcements, the 3730, IBM says can work as a "stend-alone word processor" whereas what they mean is "shared-logic word processor"

What the rest of the world csils a minicomputer, IBM cslis — what does it call it? On iooking through the bumph, I get the feeling it avoids the lssue, like upper-class English people with no name for the last course of a meal.

I would be the last to claim to understand what goes on Inside Big Blue's vast Inscrut able corporate mentality, but ! suspect it has something to do with the use of language to conceal thought, a devious practice with a long and dis-

up the Reference Library and

tha reverend gantleman, and

then the penny dropped with an aimighty clangi

Of course, it may not have been a machine that did this at

all, but a alow-witted aecretary

on the end of a dictaphone

Humsn baings make mistakea

It would be hard to beet the

circular received by the office

of the Better Business Bureau

Unilluminating addresses

recognition equipment is still a long way from being practical, if it ever wilt be, but I suspect esked if they knew anything of some people in tha States are forging enesd with using it, following the principle of Admiral Farragut who said, Damn the torpedoes. Full steam ahead!"

Recently RTE, tha Irish televiaion service, received from the US a book addressed to "Rev Slyberry". Nobody in the Religious Department had ever heard of such a clergy-man. There was much puzzling in a Midwest American town. It was oddressed to "Ms Betty

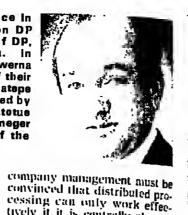
Getting in on the act

THE Family Planning Clinic in ald for patients with asxual Sandwell. Cheshirs, is problems." apparently acquiring a Mickie, the patismt interviewing sys-tem dsvised at the National Physical Laboratory. The pting to explein this, informs its readera: "The typewriterized computer acts as a visual

function hardwara. I know Chris Evans at the NPL has a reputation for unconventionality, but I didn't know his mechines actusily damon-atrated this sort of thing! which buzzes close to eny discussion on informa-tion technology; and it is a phrese that could carry a nasty sting in its tail for any DP maneger who falls

DP menagera who regerd the moves towards corporete integrated information services as an intellectual exercise in hypothetical speculetion

Systems, hea hed considerable experience in observing et close querters the impact on DP menegamant cereers of the convergence of DP, elecommunications and micro technologies. In this interview with Melcolm Politis, Yoareley werns OP menegere that they should take stock of their future quickly end initiate positive end urgent steps to ensure that they use the changes introduced by Intellectual exercise in hypothetical speculation could be facing a nesty day of reckoning as they become boxed into a cereer path that has nowhere or administrator in the race to the top of the



tively it it is centrally planned

The DPM, Yearsley said, must

became the progenitor of ideas. He must establish u relationship

with the whole company, so that there is a feeling that the DP

department is the place to go to receive advice and assistance on any aspect of information tech-

a large group who one day found himself faced with a corporate

decision that the DP department

was to become a profit centre

and that ull the other operating

divisions in the group had been

given the freedom to choose

whether they used his depart-

ment or some outside DP ser-

At first, Yearsley sald, the

DPM was worried because be

realised he hod to self his ser-

vices rather than sitling back

and waiting for the compulsory

This gave him the impetus to

get out and talk to users to find

out what they wented. And what they wanted initially was s

mini to call their own; some-

thing on which they could do

He realised eventually that the user divisions did not really care what type of systems they had - the "mini" fins were only

hooked on the intest buzz

phrase. So he made a deal with

contacturer of small busi-

ness systems to buy in bulk,

thereby making a cost saving; he

ustalled a small business system

in each operating division while

still keeping his own mainframe

As a result of this, the DP

manager was seen to be the

was giving them the service they

winted, and he raised his status

tems that added to the effec-

lyiness of the corporate opera-

"This is on example of the best

in DP management, with the DP

department acting as the agent

Given the problems of rapid

technological change - in-

advice would Yearsicy give a DP

mnnager who has agen "the

writing on the wall" and wishes

to avoid the fate of the dinosaur

properly," is his moin edvice.

"Delegate the operations to the

computer services manager and

The DP mnnager is in

danger of sitting back in a com-

fortable technical niche, while

the tide of micros and word pro-

ccssors rises oll around him. On the other hand, the DP

"Make surc you delegate

and the dode?

ifepartment going

their own local work.

users to roll in.

Are DPMs going the way of the dinosaur?

LIKE the dinosaur falling to pinnacle of the DP management simile) services. keep up with evolution, DP ladder so far. "When the so managers could face extinction

Yearsley, a director of BIS ' This top job dld not go to the to the DPM by the convergence vice that will encompass the areas currently the concarn of separate departments and managers - office services, the mall room, telecommunications and the traditional DP depart-

"Dinosaurs grew to be very big but they developed some communications problems between their brains and their tail," Yearsley soid, drawing a comparlson with large DP departments which are becoming out of touch with what is happening. around the fringe of their area

"So when sabre tooth tigera attarted biting thair victims' tails, It took a long time for the message to resch the dinosaur's brain and for the beast to react.

environment led to the axtinc-

who gets the function that will attack msinly at the office be created in msny organisa-tions of "controller of administ-

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telecommunications.

sulate tha challenge being posed experience on the office and ad- end users of the systems." ministretion side. Yearsley be-

Yearsley said he had already. In a company hegin to realise unless they take the initiative in been involved in one organisa- that it needs a top man to coestablishing themselves es a tion which has established the ordinate end control all these controlling influence in the position of administration con-changing field of corporate in-DP, office administration and viewed as too much of n technithe wider problems of the or-Applied Systems, uses to encap- DP manager but someone with ganisation and the needs of the

The DP manager has often got



tion of the dinosaur and I would field," he commented. "They feel recommend Charles Darwin's they've climbed Everest and Origin of the Speciaa ss s sslu- seen it all bafore. Yet at the and to become "the friend of the

change their old ways to meet new trends," stressed Yearsley.

"The word processing morket, for example, is growing lika Tha key challange to the sur- crszy and the companies mar- should oneure a ratio is esta-

Yearsley pointsd out that This function will be far wider like the IBM 3750, which srs than the mansgement sarvices function which has been the of voice, data and picture (fac-

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screen in 1 second

taka the initiative soon, this kind Yearsloy bolloves. "Many DP of failure to progress in the company hierarchy will consucked up into the management "I meet so many people in DP have allowed themselves to bestreom carly in their career and that they have reached the top self-contained hox and have not "Failure to adapt to a new and have done everything there spent sufficient time looking was to be done in their own outside their immediate DP

tary text for any DP manager to edgas of their nraas of direct read as a warning to what can control, revolutions are going casful future for the DP manngemont, nurording to

"For a start, the DP manager vival of the DP manager as a thriving apecias, according to there selling, salling, selling. And the company which sistes that any purchase of thay are aiming their aglas hardwork over about £1,000 should be agreed with the DPM," he said. "In urder to do ration" or "information services there is growing use of controller".

there is growing use of the time to exploin to the company's top executives that, in the limit of the limit o unless a rule lika this is implemented, anarchy could raign in tha company with different, oftsn incompotible aystems, growing in different ports of the

"He should set up o working the development to the systems party which involves the msnsger. Make time for yoursel managers and staff from nil tha departments that might be in-volved. He should not woit until ths word processing epplications creap up on him

"The DPM should discuss the penafita of new systems and services on the market with all manager con carve out e career poth full of power and glory and relavant departments. The user muat be shown that distributed trol for soms of their own information processing oan he mation processing oan bc running out. The future has olreody begun.

Selling to the unions

TRADE unions will play en inorsasingly irriportant role in the
running of DP departments and
DF managers will have to become more skilled in employee
and industrial relations, eccording to Ron Yesraley.
Whether DR managers like
it not, more and more of their
time is likely to be apent dealing
yith, yeds unions acting both
for their own staff and for users'
staff.

'ICL is glad to report the cost of computing is falling 15% a year while we continue to grow.'



remarkable is that while the UK retail price index has been rising at over 10% a year, the cost of computing has been falling by around 15% annually. A £25,000 computer, at today's prices will do the work of a machine that would have cost over £100,000, ten years ago. Rapid advances in technology are giving the computer user better value for money every year that passes. Fortunately, we have the products the market base in eighty-six countries around the world, and the enthusiasm to continue to expand at the same rate that we have achieved over the past ten years. At the same time, the cost performance of our products continues to improve.

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EDITED BY PETER HEWITT

GILB'S MYTHODOLOGY

Record level hash totals as a safety belt

THIS column introduces a some aort of fault, one which fairly narrow idea, but then was not detectable by parity safety belts are narrow and

they can still save lives.
The basic idaa is almply that logical application records, such as those at the 01 Cobol ievel, muat alao contain a checksum which is usually a word of storage which is the binary sum of all other worda In the record.

The checksum la recalculated whenever the record is updated and is available for re-checking at any time we want to verify the integrity of the record, in particular before

any new update.
One of the few places I have seen this technique recently ia in IBM's floppy disc control field specification. But it is absent from almost all texts on

database and file design. Even Gio Wiederhold's book "Database Design" (McGraw Hill, 1977, 65g pp) doas not mention it directly as far as i can see and only hints at a core ouffer checksum.

The first time I saw it applied was in 1965 by IBM's aoftware distribution centre in Paris, for the protection of records, which were operating systems n an 80 character format on

After weeks of frustration in trying to generate operating systems from tapes which had

checka, or any conventional check, IBM discovered that there was an Siat column on tape records and generated a record level hash total for each

When we got the tapea from Paris, we could immadiately detect the presence of faulty records, and since we knew the exact record we could often get a Telex correction. Previously we only knew something waa wrong and e new tapa was diapatched from Paris.

This wea dramatic in practice and from then on I became aware that there ware a large number of file integrity altua-tions which would banefit from the technique.

Certainly, today, I make it an early design spacification in any file where reliability controi la important and that covers almost all files.

Yet, to this day, neither IBM nor other manufacturars please corract me if I'm wrong) teach this technique. or write about it, or even include it as an option in databasa management software, floppy discs excepted.

One reason why many people mentally discarded the technique was the cost of space and computetion time for it, as opposed to thair.

Information

Studies

goes into Orbit

Information Studies thanks IBM for the timely announcement

of Orbit and the Distributed Office Communications System.

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leading communications consultants David Hebditch and Fred

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Tel: Chorleywood (09278) 4244.

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Information Studies Limited.

Lamond, Saroj Kar'of Telecom Computer Technology USA

ment of these announcements, by Phil Dorn of New York.

and Dale Kutnick, The Yankee Group, USA.

Participants at "Communicating with IBM" on 7-8 November

The economics hav changed dramatically and the use of secondary atorage space and CPU cycles to protect centralised onlina database records seems like a much better trade-off now.

When you recognise that the conventional re-reading of disc records can be dropped, when you use RLHT, there laan even more immediate and tempting

You cannot attempt immediate re-writes when you later detect an error but, on the other hand, you get arror de-lection protection for the life of the record which is far more valuable than aimple verification that the record agems to be OK the instant it was written.

In particular you get protec tion from software errora, both In your programs and the suppliar aoftware. Thare are already thousands of known bugs present in any large operating system in case you didn't know.

I can't go any deeper here but the idea is out in front of you. It is your responsibility to ntegrate this technique into your data protection design. I says so in igM's software con trscis and user manuals too.

l hope you will aak, as man of my atudents do: "Why didn we learn about this long ago?"

accesa, index aequential access data entry. end transaction chaining. If you are lucky, the micro you choose to work with will have some kind of index aequential access you will probably have to work from first principles.

The lack of sophiaticated operating system and file necess aids has a major impact on system design, as have the two other ahortcomings of micrns compared to mainframea. That is: low volume, backup storage and low speed printing. Thera follows a list of dealgn perametara which sre particularly applicable to micro-based systems, although some of them can equally be said to apply to

nainframa systems. Transaction flies should be designed for multiple uae, eg. the same file ahould be used to update the sales ledger, to print the sales day book, to update the | Parallel Bit inputs.

Puzzler

one faulty coin in a batch of 12 the maximum possible number given that the odd-coin-out is either lighter or heavier than the

Now, if the faulty coin it known to be lighter, then neturelly a greater number of coins can be catered for in the anatysis. This week's problem is to find just how large the betch oen be in this case, and to formulate a sultabla method for identification. See page 53 for solution.

PROGRAMMER NOTES

Micros challenge older techniques

with mainframes to working with micros, the following notes may give more information on which to base a decision and, to snyone who has recently made the change, they may be inatru-mental in providing a ahortcut to acquiring the relevant skills.

The main areas where it is likely that some education will be required are operating aystema and their functions; and trained operators, which is what file access techniques.

Working on mainframes it la easy to forget how much tha machine'a operating eystem does for one, particularly when working in high level languages, which must surely be the high-est probability for application

programmers and analysts.
The kind of routines which mey have to be developed include logical record input and output; memory initialisation; acreen manipulations such as clears, roll-up, display in sec- micro. tions etc; data entry; buffering and unbuffering of packed data; print editing; and general error most end users are, tend to be interception and recovery unconcerned about leaving the

It is worth apending a lot of time to get these routines written efficiently, both in terms of Reports should be concise and operating speed and storage short, if they are produced

The second area which one tends to take for granted, working on mainframes, is flie access techniques.

The thrae apacific techniques

Simultaneous updating end printing should be avoided if et all possible. Spooling of printout la unlikely to be practicable, and

MOST people know that three weighings, on a two-pan balance, will auffice to identify

user. This not only allows the backup discs to get multiple user to overcome the problem in copies of a report can be difficult and time-consuming. many Instances, but also makes Control techniques should be life easier for the backup team in developed to bring to the attenmore serious cases. tion of the user the fact that data Security backups should be an files are reading capucity, while

integral part of the system, he still has the opportunity to otherwise recovery can become deal with the problem will in the impossible, or at least extremely normsl system. migthy.

Modular techniques should be Queuea of batch jobs should be kept to a minimum. Unused whenever possible so that

program development and own

The sequence of operations in

programs which have to be re-

slarinble is highly critical. That

is: cantral counts of records read

and written, and position of in-

put record last updated should be all updated at the end of the

sequence of aperations, simult-

If program overlays are

necessary they should be

executed when there is a natural

aneously if possible.

coding should be considered.

the same piece of coding, mndified if necessary, cen be used many times and not re-Most softwere people have coded. This saves not only main been trained on meinfremee memory space but object code and minle. The incressing space on the limited backup use of the micro throws up storage medium. new chellenges to those A library of slandard macros should be developed and used schooled in the older techwhenever possible, unless a proniques. Jeck Schumenn of Star Computer Centre program has a high data-entry cnntest, in which case speed of vides some notes for tha nperation overrides speed of

machine on its own for long

Reports ahould be concise unil requirement, as the effort will be automatically. Only those which repaid in aubsequent apeed of spplication program developation about disclude nil the data which it is possible to provide. Strict standards should be theveloped for screen layouts and particularly dum-entry positions. Ease of use must be the major consideration, and this worth studying are direct tendain practice to mean case of

programmer ebout to

embark on living with the

hreak in the sequenca of input. In summary it is true to say that the difference between maintrames and micros is one of width of technique. One tends to have in do more to achieve the same result, but to have to do it efficiently to avoid using up the capacity of the machine or the System errors should be in-

kind of index aequential access package, but even if it does it is quite likely that it will not be aufficient to cover all needs, and as far as the other two techniques mentioned are concernad you will probably have to work



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Tolen 308762 AMADEX G



SOFTWARE, FILE

squetured programming is lining incressingly used by the mure progressive programming shops, but the many systems designers atilt roly inreoly on traditional glas of thumb.

As a contribution to increasing awareness of the needs to improve system design lechniquae, Computor Wonkly is sturting part week a 10-part tutorial series on structured file and datalines design written by Max Stewart, divisional technical soppor manager of Loyland vohicles. While centrel region, Stownrt installed the ware in the 80s.

operating software for one of the UK's first IBM 3602 SNA distributed databass systonis. In the series, Stewart will explain the underlying concepts of one of the most aignificant developmenta in database design, the rolational database.

As a preview to the series and to place the aignificance of relational databases in tarnia of the raal world of IBM marketing and product announcements, this week Stewart takes a peek into the future and prodicts the likely impact of relational dateport manager of the Loyland's Scrittish base systems on IBM's hardware and soft-

How IBM database systems might look in the 1980s

the general lenor of IBM's publicity when US/VS and DOS/VS were innounced in a blaze of sententious glory. Accepting the limitations of 19ths-vintage hardware, "human wave" programming teams (Isrge was beautiful in those days) and a truly archaic job control language, they didn't turn out to be too bad after all. But IBM did not invent virtual storage; and our story could be repeated for many of IBM's less also be released.

The purpose behind this "dig" at IBM is to reinforce one point it was not first off the line but ended up leading the market place by sheer bulk and morcle. But what of the consequences if IBM had been first in some ince-

We will shortly familiand only loo easily: the invention of relational database systems is arguably the most significant development this absender and IBM could with considerable justification claim a propunction right to the conrept

The future of experimental relatiografication hase systems thus rests largely in IBM's lap and it is not heap propriate to make some presintions based upon present Acends in iBM hardware and software development.

IBM will not produce a Codasyl set-structure that alease management system.

IBM will introduce a life bon dling (barh end) functional pro-Cessor within the next eighteen months. This processor will handle all IBM file structures (possibly emulating a XISO serbes disc controller) but will have n hallye mode for immelling Visua

This native mode will allow some Vsam functions - Imlex Searching for examples to be off-maded from the main pro-

There is a strong similarity with the way 370X TP controlless work: Vuon resides in the am processor: Nt'P resides in the 370X and takes on some of the work which no older necess melhod such as Biam performs is the main processor. The back-end processor will

memory cache to resince the for clustered retricvals, this again has a parallel in the dynamic address translation look aside buffer of the current series of main processurs.

Input/output channels will ecome microcode-driven subrocessors in their own right. They will be controlled in groups of six by o "functional proces-Sor" development of the existing 3030-series channel director.

This new intelligence will give channels a feature which has

working — analogous to running a communications link of full-insteed of half-duplex.

sor, and the Vsum indexsearching mechanism will be extended to support generalised searching on content. The work involved in answering a query such as "RETRIEVE ALL EMPLOYEE NUMBERS WHERE CAGE GREATER TRAN 60 and SEX-FEMALE) OR TABLE 65 AND SEX

MALE AND LONG-SERVICE "YES)" will be performed mainly in the life proressor by searching the duta content of records rather than by searching indexes.

System R will be offered with on IMS bridging aid similar to the bancing of provided by Viano lan with extensive murnicode assist. IMS users will thus he able to access a subset of a System R database, System R will also allow a System R (le map-IMS) user program to access an IMS Vsam database. System R "Inples" will be accessed as IMS segments and vice versa. IMS itself will contime to be supported.

Although System R is essentrally interactive and terminal hazard, it will provide a hiwer level acrees method to user programs similar to the ACB/RPt. mechanism used by Vsam and Ytana. Programs will be able to exertite binne System R commonds in their high-level form using on SVC or Diagnuse interface similar to that available in VM/CMS programs.

The difference between files and databases will become blarred. From the user's point of view duta will be stored end nicessed as simple unstructured files. Users will be able to build hlernchins or Cndeeyl sotstructures of files at will since have a lurge capacity bubble the System R structure is more general than either.

Data will he defin Dictionary and the object form of a definition (similar in principle to the object form of an IMS DBD) will be produced uutomatically, Assist microcode will subsequently be announced to interprat high-level language data definitions dynamically (at run time).

Lat us finelly make one pre-diction to what even the purists appetities. The unit of informacommunications network is to the user, a request response unit

For the H series of processors due within two years the MVS operating system will be extended to support IBM's System "tupis"). It is thus possible that ISIational datibase manage language Sequel.

Many System R functions will be performed in the file process: thing.

Analysing circular structures

SDFTWARE tor civil en-ginesring provided by buresu SIA has been sugmented with Shells, a program tor enelysing ctrculer structures.

circuler structures.

The effects of wind, temper sture, settling, earthquakes and such on chimneys, cooling towers, curved box girder bridges, end similar etructures cen be excerteined in general terms betore more detaited

studies are made. StA cisims there ere virtueil no restrictions on the size of problem that can be run. The bureau operates a CDC Cybe 72 front-ending s CDC 6600.

Value on Butch market

OPERATIONS software products developed by Value Computing are to be introduced on to the Dutch market by lis UK dlstributor RTZ Computer Services at an Amsterdam aeminar on

Mystery surrounds DEC's Bliss-32 in UK

THE new Bilss-32 language for some OEMs may welcome it in writing system software on the RTL-2 compllers. VAX minicomputer appears to be something of an unknown

quantity, at least in the UK. nounced Bliss-32 for the VAX-11/780 32-blt minicomputer two weeks sgo, along with aeveral hardware enhancementa (CW,

Bliss has been used by DEC for writing operating systems, compllers and handlers since the start of the decade. It has never been made available to cuatomers in the UK before. although some US users have exerted sufficient pressure on

the company to get access to lt. Now, however, it is formally avallable on the VAX and, in the US, it will be offered from January at a once-only licence fee of \$12,000. No UK price Is avallable.

The language beara some similarity to Paacal, Coral and Algol, but is very apecifically limited to writing system aoft-ware, and DEC believes that

the UK for writing things like

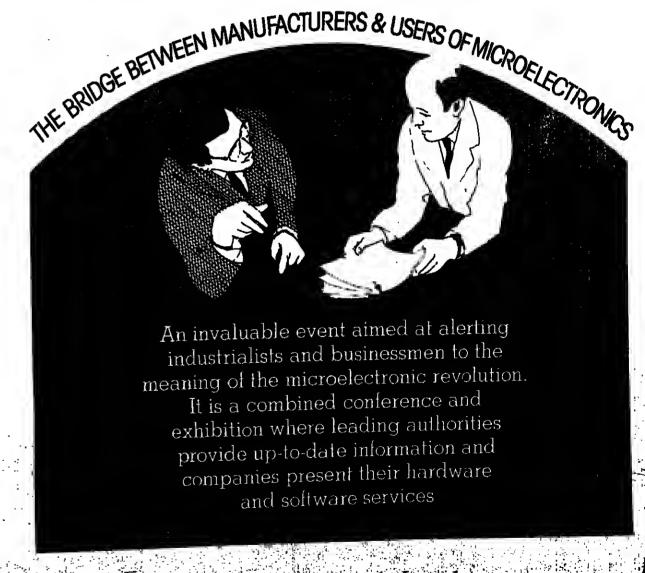
Few details of the language are yet avsilable however and Arbat, the systems house which specielises in writing system and application softwere for banling and finance, while aware of the language, knew little about

DEC Itself is firmly wedded to Bllss, despite aome pressure from within the company to switch to the increasingly popular Bell Labs C language for writing system software.

Distillery contract

COMMERCIAL systems for a Honeywell Level 62 computer ordered by James Burrough Ltd are to be designed by Software Sciences. Management Informstion, financial, order processing, and atock recording systems are the first applications required by the company, which distlis Beefeater Gin and Borzoi

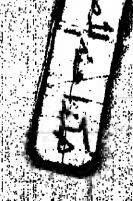
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By Bernard Allen OP SPOT

OPERATIONS steff are oftan remarkably loval to the operating system thay about oparating systems is that certain heve been brought up on.

group of steff with different carear the jergon and terminology paculier to backgrounds (in terms of the softwere each system. they have used) and get them to compare notes. You can be sure that each

The problem with such discussions barriers axist; some are concaptuel in

end as a forarunner to the OS/VS operating systems.

Now, whet follows is intended pri-If you don't believe me, assemble s nature, but in the main they relete to marily for those who heve little or no knowlege of the system and so I must esk IBM OS oparators to beer with ma. Bearing this in mind I would like to Although the system supports TP netdiscuss IBM OS, which is widaly used works and usually works in conjuncwill promote the merits of his perticu- on thet manufecturar's 360 series and tion with e spooling system, I am going

worthy of consideration both in itself to consider it in isolation. Trying to gain a wider knowledge of systems

multiprogramming with a fixed the systam to record data con- the operator in the area connumber of tasks (OS/MFT), and cerning the resources the job cerned will be sent a message by multiprogramming with a variable number of taska (OS/MVT).

With the former, main storage is divided into fixed partitions WRITER and an INITIATOR. (cach of which supports one job at a time), while the letter has live on diac and may be loaded INITIATORS which allocate into main storage by means of the START command. Next he resources) in accordance with must feed the job into the card each particular job's require- reader, and after this OS takes

In this discussion I shall refer to OS/MVT.

Let's start on the assumption that the system has already been oaded and trace a single batch ob through the system.

Now, at all atages the system will display messages relating to

THE following are commands of this command. For example, if

which the operator uses in order to communicate with IBM OS.

Each may be abbreviated to the

start procedures. For example: S WTR,OOE

MODIFY (F). This will alter

the function of a procedura. For

example, to respectfy the output

F 022, Class == 123pqr

operator might enter:

procedures. Format:

P OOE

D U,TAPE

classes served by a writer, the

STOP (P). Often referred to as

the PARK command (as in par-

king a car), this is used to atop

DISPLAY (D). This enables

the operator to know the state of

many of the systems resources.

For example, to find out which

lie might enter the following;

tape drives are available for use

MONITOR (MN). Dynami-

cally displaying the system's live tasks and the number of Jobs on

the queues, are two of the appli-

cations for MONITOR. The lat-

SWAP (G). The operator can

transfer a tape or diac volume to

an afternative device by means

ter la achieved by specifying;

letter shown in parentheses: other START (S). This is used to mat:

The first step for the operator carries out the function ls to start a READER. a These are all procedures which

Firstly, the READER procedone of the input queues. It in- printer. forms the master console operator of this by sending bim the

Next the INITIATOR allocates the system resources req-ulred by the job: the tape and

one drive is unable to read a

particular tape, SWAP might be

used in order to find out if an-

other unit is able to do so. For-

in an onlina or offlina stata (in

the former they may be allo-cated to jobs, or tasks, while in

the latter they may not), by means of VARY. Example:

CANCEL (C). By means of

this command, the operator can

terminate a job at any stage of

its processing, whether it be on the input or output queues;

actually live and running; or

being printed. Its format le os

MOUNT (M). Tape and disc

drives are assigned to the

appropriate media by MOUNT.

M 145, Vol = (SL, 123456)

effect opposite to that of the

MOUNT command previously

SET (T). As shown in the fol-

lowing example, SET is used to

specify such system parameters

described, Format:

as the time and date:

U 145

UNLOAD (U). This has an

V J40,Onlina

VARY (V). Devices are placad

the aystem requesting that he

At the end of the job, the IN-ITIATOR will de-allocate resources, place any listings to be printed or punched on the output queues, and keep the system operator informed about this by sending him a series of

The WRITER will than take the output from the queues and ure takes the job and places it on transfer it to the appropriate

That'a it in a nutahell. Any hardware or software errors would have been related to the system operator by meana of the

In future Op Spots I Intend to disc drives and main storage, examine certain parts of the In addition to this, the System etc. Now, each time a tape or system in relation to a "real" OS

T Date = 78.250, Clock

HOLD (H), Using this com-

mand, it is possible to defer the

processing of a Job by placing it on the HOLD queue. Format:

RELEASE (A). Joba are freed

RESET (R). The class and

priority of jobs on the input and

output queues may be altared by

means of this command, For-

REPLY (R). Certain system

messages require a reply to be typed by the operator. To that

end, ha uses this command. For-

BROADCAST (B). Com-

munication between staff et dif-

ferent work areas is the purpose

of this command. For exampla,

sole might send the following

meseage to those tending the

B 'MUR, Load payalipa on

LOG (L) The operator uses

this command in order to record .

the operator at the master con-

E. Jobname, Class = p,

from the HOLD queue by this

= 08.15.00

command, Format

Prtv = 5

R 1D.text

the operator communicates with

environment (es opposed to the highly simplified one just described). These include: 1) The types of messages issued

ov t**he s**ystem.

3) The SYSI.LOGREC and

5) Main storage (often called "core") fragmentation.

I would like to hear the comments and views of operations staff with OS experience, and welcome any questions on

somatimes cause problems; es one ts removed from a tape is teeves a realdue which will avon-2) The OS message routeing Underlapping — carry

SYSI.DUMP data sets, or files, on which data related to hardware and aoftware problems i recorded, respectively. 4) Certain commands in greater

6) The Houston Automatic Spooling Program (HASP).

messages on the systems hard-

usc in keeping everyone up tu

dote regarding the aysteins

L'Unit OOE under service

L'Unit OOE back in use at

SWITCH (1). The system

Management File comprises two data sets, X and Y, which are

used allernatively by the system

to record data relating tu lis

throughput and performance in

SWITCH instructs the system

to close the octive duto set (in

response the aystem reminds the

operator to get the dnto printed) and bring the other into play.

WRITELOG (W). The sysicm

log comprises two files, X and Y,

of which only one is written to at

any particular time. This com-

mand causes the octive one to be

closed and dumped to the output

quaues, and brings the escond

DEFINE (N). This applies only to OS/MFT, under which it is

used to specify the size of, and

job classes served by, each par-

Into play. Format:

hardware. For example

at 16.00"

17.40

I would like to thank this per-

titlon. Normally, the operator

ment of pre-printed stutionery.

Writes one operator, "When

there is a puper change, place

the first form of the new hox

under the lust form of the old

one. Your suggestion to overlan

the paper would result in two

half-completed forms."

HINT OF THE WEEK

A few tips on the

maintenance of media

Palmer, en opportor et rie Worthing elte of tho Gateway sullding Society, suggested the menner in which e smell to medium-elzed tape (library might be organised.

And this week, she puts for-

ward come tipe relating to the meintenence of the modie with o view to reducing the number of reed/write errors that occur.

Sits also points out that "taps drives alrould be cleaned at the beginning of each dey and immediately before any lerge job is run."

"The need to clean tepes and drives, regulerly, is not stressed tape drives should be kept shut at enough," says Doborah.

Stio continues, "The labels accumulation of dust inside the

used for volume Idontification unita.

it out with care

redefine them accordingly, For-

copy log. It might be put to good will list the partitions and

HALT (2). This causes the to check the horizontal plane of be followed by un IPI. (load).

Good Data

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halp satisfy usors and active a smooth, trouble.

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Z EOD

MUCH comment has been son und plead guilty. I did in fact generated by on Op Spot hint of mean to write "underlep". severel wecks ago (CW, Sep-Rod Small, chief operator at tember 14), relating to the align-

only by the top ones."

the Automobile Association's site in Basingstoke, Hsats, says that he is aware that I mesnt underlap and, while he agrees with the tip in principle, stresses that great cure must be used.

Sits also points out thet "taps

nil times so es to provent the

In relation to print quality he says, "If this nicthod is used. extra attention should be paid to the print of the last page or two of the old buxloed of paper. From experience, problems sometimes arise with print clarity and phasing because of the increased thickness of the Comcorning the actual align-

ment of the paper, he continues. grams". "Attention should also be paid to the last page of the old boxload the lines of print. The reason for this is that the paper has greater play from the time it leaves the buttom tractors and is pulled

ordination of communications between tasks being executed on

Two new control concepts are

Introduced with BNA. The first,

Host Services, assigns various

new capabilities to each host in a network. These are the coa number of hosts, the ability to access a databasa held on e different host, the ability to perform file handling tasks in counection with another host, and the ability to cause a processing task to be performed on a different host. The other new control con-

cept, Network Services, controls

Burroughs systems can

work via their own computer keeping user application pro-

Banks study chain of terminals in shops

a two-year study by a working party, which concluded thet such a system la possibla.

number which would identify the card holder. Each transoction would be checked by the bank before payment was made

The banks are still cautious about taking this step, The project team will study

taken until well into tha 1980a. Tha banks and credit card

before Singer pulled out of the computer business, it was working on plens to develop the 1500 as a competitor for the 18M System 32. ICL has brought many of those plans to fruition, and has just introduced a complete 1500 package for eatete agents called Easy, which includes rent accounting, a property sales system which matches clients to properties and a particular method. ties, end en optional melling module. instelletions of 1500s have doubled to over 10,000 eince ICL acquired the product two

years ego, and it is now e vitel item in the compeny's portfolio. The compeny expects its business in small eystems end terminals to match the industry profile by growing at three times the rate of mainframe seles over the next

Pictured is the 1508, which includes dual certridge tape drives at the top of the unit.



Networking era arrives for Burroughs users

ICL adds floppy disc storage to 1500 series

under £10.000.

rengs.
The 1505 offers 9K or 16K bytes of MOS

memory, end joine the 1501, 1501/40 and 1503 se the current models in the line. The 1501/40 edde a single disc controller to the

besic emell-acreen model, while the 1803 tekas up to 32K bytee of memory end cen

support up to four disc drives.

A fully-configured 1505 with 15K bytes of memory, dual teps certridges, four floppy drives and 100 chps metrix printer costs just

In addition to the Sasic compiler and Cobol, intreduced earlier this year, softwere to emulate the ICL 7191 interactive communica-

tions protocol for linking to lerge 2900s is evellable, and interactive IRM communication fecilities will be reedy shortly.

ing has arrived for Burroughs users. The mainframe company has finally announced its system software for those who wish to develop networks of interconnecting computers, under the name of Burroughs Network Architecture, BNA.

for the large-screen model heve been en-

naunced by ICL for the 1500 series of tran-

eaction terminel systems. A new business-

oriented Besic compiler has been introduced and, as forecast jCW, September 7), the Cume

deley wheel printer hea been edded to the renga offered with the 1500.

The new 1020-cherecter display desk top

version of the 1500 is called the 1505, and effectively replaces the 1502 which offered

similer fentures but had the electronice

Twin integral single-reel magnetic cassette drives ere offered es an option an the 1505,

end the floppy diec drives come in either e dask top twin drive unit or a desk-mounted four-drive unit. The drives ere duel-density CDC

ounted in a deak padeetal.

Burroughs has placed heavy emphasis on flexibility. BNA allows any element in a network to communicate with any other, or to consult any database, Job tasks and files can be transferred from one host to another, and jobs can be shared between different hosts.

And Burroughs says usera can implement BNA copabilities at their own pace and "without affecting the basic structures of the user's existing application programs or data communications and network control pro-

and is implemented at host level. and MCS systems.

Algol and Fortran to use the full to happen in 1979.

operating environment is pre-

served. BNA extensions have

been added to existing supervi-

sory software to enable existing programs written in Cobol, PL/1,

communications between hosts by means of Burroughs Data Link Control bit-oriented procedures. It also permits Burroughs computars to be interfaced to X25 packet switching services.

BNA is a software system plready be linked to nonrequiring no special hardware. Burroughs systems via the NDL

Thus terminals communicate As for programming the with other elements of the net-existing Burroughs policy of

THE fcusibility of ostablishing a chain of banking terminals in shops and stores throughout the country is to be examined by n project teem established by the major banks and credit card companies. The declalon follows

The proposal being examined ia that the ahoppar, when making a purchasa, should be able to usa a terminal to settle his bill, the amount being charged to his or her bank or credit card account. The same terminal would be used for all banks, rather than one terminal for each bank in each shop.

in conjunction with a security card.

the social Implications as a priority/ as well as working out the technical datails, and a decision to go ahead will not be

companies involved in the pro-ject team are backeys, Lloyds, Midland, National Westminster, Williams & Glyn's, Bank of Scot land, Royal Bank of Scotland, Clydesdale, Co-oparative, Cen-The terminals would be trai Trustes Savings Bank, Bank operated by a plastic card, used of England, Access and Barcia;

NCR profits up 68%

trol Data and NCR all show big increases over the same period trend at Control Data; profits in 1977. NCR was the star per rosa 32% to \$24.1 million overall.

in 1977. NCR was the atar performer, with a 68% profit riae on continuing operations.

At IBM, an 18.2% increase in net profit to \$816 million shows a dramatic improvament over the figures raported for tha first and second quarters, which were only 2.8 and 5% better than the same periods in 1977. Turnover division, sold earlier in the year rosa 15% to \$5.280 million, with 50 million overall, but the company's edmputar but the company's edmputar but the company's company a cdmputar but the company's company a cdmputar but the company's edmputar but the company's edmputar but the company's company a cdmputar but the company a cdmputar but the company's company a cdmputar but the company a cdmputar but the company a cdmputar but the company as the second divisions and a company and the company and

THIRD quarter turnover and cradited for much of the profit figures from IBM, Con-

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Use of computers in exploration Kindel P. McNelli, J. Sefel &

10.15 Offshore atructural modalling simplified through interactive grephics Peter Klie, BOC

Use of computers in production engineering. R. Schofleid, BNOC 11.00 K, S. Doherty, Global Technical

Sarvices Ltd. J. M. Stacey, Chemahare Process Systema Ltd.

Use of computars for drilling Larry Flournoy, Drill-Tech Ltd. Computers for Planning from axploration to float-out

15.15 Computer aids for reservoir models. Dr David Wilson, Imperial College

14.45 Use of computers in platform peration and control Computers—futura developments

Systems Ltd.

12.15 Lunch

fi the oil and gas industry Alun Whittakar, Exploration ogging (Services) Ltd. 16.00 Conference enda

Delegates' fees include fall report of the Conference proceedings, morning soffee, lunch and ofternoon ten on soked. There will be no papers distributed in advance,

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PEOPLE AND EVENTS

An MD for military micros

A MANAGING director has been a managing director has been eppointed at Systems Production Ltd, part of the Systems Design international group. He is Alan Wheeler, who is a director of Systems Design Ltd.

Wheeler has been involved with military aerospace systems for over 20 years and his first contact with computers came via work on Blue Streak end Linesman for Marconi. He was also seconded for a year to the Nadge consortium farmed to set up an eir defence system, where his

ilgital systems from the members. He Joined SDL in 1973 as a senior consultant on air traffic control and defence aysteme and in 1976 was made a director responsible for all project work.
Group chairman Philip Swinstee

has been octing as MD of SPL since its farmatian in 1977. It wee formed to provide micro-based products and systeme using SDL'a experience in the specification and procurement of hordware, particularly for military

They are Poter Smith, previously managing consultent of Quadrant Recruitmeni's Monchester office.

and David Swenn, who was a con-aultant in the company's Sheffield

office.
From CAP Northern, where he

was a sales executive, George Gunr

joins Quadrant's Monchester office

John Kelly has become technical resources menager of Computer

People Contracts, e VLI Group com-pany. Hie last job was ee DP opere-

tions research team leader on a pro-ject in Zembia for Roan Con-

acildated Minea.

Also in the VLI Group are Soltware Implementation Ltd, where Mike Anderton has become caleo

ond marketing menoger, and Com-puter People Contracts, where Tony Anionladee, formerly a sales

executive, has become soles manager for the South-East and several national accounts.

COURSES

Liveware Saga

WHAT SEE YOU IN YOU

OMERLIN?

O'ERFLOWING BY

YOU SAY?

HOW MUCH, WOULD

in the same capacity.

at Quadrant Software



Multiple appointments made

ruggedised inductrial systems and here again, experience with military aystems for use in hazardous situa-

Dovid Marwood, company accroepplications.

There are also plans for SPL to enter the field of the development of tary of ICL, has been appointed a director of international Computers Ltd, its main operating subsidiary.

Recently appointed customer en-gineers with Cara ere Bill Fogarty,

previously on engineer with the irish Department of Posts and Teleg

rnnhs, ond Martin Gleeson, who

Arthur Stapleton

THE death has occurred of Arthur Stapleton, founder of Advance Electronics Ltd. He retired in 1989 but it was

A LAND O'ERFLOWING

. WOULD YOU BELIEVE

FIVE PER CENT?

Obituary

Tom Torple his joined the ogobax OEM division as South of England sales manager for aratrix printers and terminols from Tread ications, where he was an

ICL gives you

dreams for lunch

and fentacles which often o varisks our minds during the working day, whether in the affice, the etreet, or et home". It was written by Chris Whittinghem and Devid Seebrack, who also provide the instrumental

Performances will be on Wadnesdays to Seturdays at 1.10 pm one undeys at 1.09, for two waeks. Pub food will be available.

Bryen James, previously South Wiles zone sales intringer with Burroughs, and Peter Wilson, previously an accounts monager with Burroughs, have moved to Redifon Computers as account managers for

Joen Alnsworth has joined OCC Computer Personnel as a sening ent consultant. Previously she was with Force & Computer Ser vices in the same caracity.

Tom Garrier, managing director of the Ralamazoo Group, has been nted chairnom of the recently formed enbeldlury Kulanrazon Finance, and group secretary Genf-frey Braithwelte has been mode a director and chief executive of the

OR award to Pactel man

Edited by Nancy Pocock

A SENIOR consultant from Pactel Adrian Williams, his won the Operational Research Society's first Prospect Award.

Williams' work for Pactel on a corporate has duestre in Fulnam is being sponsored by ICL, whose corporate has duestres is just around the corner. Opening at the King's Heed, Fulham High Streat, an October 25 for a twa-wask run is a now musical revue celled Mid-Day Drasma, a co-production by the Head Theatra Club and Amazon Thastre Co-operative.

Mid-Day Drasma is described as "e light-hearted took at the drasma and fentasias which often a wartake our minds during the workland. tanker production scheduling model for a Danish shippard won him the award, which is to be presented annually to a member of the Society for a project which has helped to promote CR in the eyes of user

Worth Enm, the award is sponsored by Prospect OR Recruliment of Hitchia, Herts.

Timy Wordliwiss Ires joined CMC us regional director, government, from Redifon Computers where he held a similar position.

Alan Seglvy los Joined Scope Dato Systems as an analyst/programmer for Conquityper and 5800 systems. ilr Patching becomes credit control manager with the accounts dertment, having formerly worked r builders merchants W. M. Monks In the Chrancial department, and Ston Hurgrenves, previously a sale executive with NCR, Mohawk and Olivetti lass been appointed South-East area sales manager with Scope,

CONFERENCES

A CONFERENCE entitled A Practical Approach to Installing Computers for THE manager of the Sheffleid office of Quedrant Software,
Les Abbott, has been eppointed to
the boord, Jeff Spencar, saleo
executive, has become technical
manager of the Sheffiald office.
Two asleo executives have been
eppointed at Quadrant Software.
They are Peter Smith, previously
managing consultont of Quadrant
They are potential the service of Cera Dota Profred Spendiove of Cera Dota Profrom senior customer engineering oervice, computer products division. Albert Devlin, previously a senior customer
engineer with NCR, has joined Cera
in the samacapacity and will operate
in the West of Ireland.

Recentiv appointed customer en-Purchasing and Supply will take place on November 7 at the Excelsion Hotel, Hasthrow Airport, London, it has been organised by the computer specialism

Calls for papers

PAPERS are invited for a conference on recent and possible future developments in the design and performance of RHV switching equipment, to be held on November, 28-28, 1979. The conference is November, 26-28, 1976. The conference is being organised by the power division of the institution of Electrical Engineers in essociation with the institution of Electrosics Engineers and the institute of Mathennitics and its Applications. Symptometric and its Applications. Symptometric by the Organising Committee, IEE Conference Dept, Savoy Place, Loudon WC2R OBL.

A CALL for papers for the Fourth Con-teranco on Soltware Engineering has been lasted by its sponsors, the NEEE Computer Boclety and Gesellachout für

informatik. The confarence is scheduled informatik. The conference is scheduled for September 17-18 and will the held in Munich. Five copies of papers, which should be 2,000 to 8,000 words long, counting figures as 300 words, are due by February i, 1079, and should be sent to the program chairman, Prof. M. M. Lyhman, imperial College. — UCD, 180 Queen's Gare, London SW7 211X. Cel. 81-589 5111.

HIE University of East Angila is organthis University of East Anglia is organ-ising a conference on conditiational optimising, which is to be held at the University on July 9-12, 1979. Papers of up to 3,000 words, in a farm suitable for publication, should be received by April 2, by Dr V. J. Raywoni-Smith, Schonal of Computing Studies, University of East Anglia, Norwich NR4 711.

circuit design, senduar Robert Spenci Dept of Electrical Engineering Imperio College, London SW7, Details: John Jol fery, ft 480 5111, ext 1450

Heat exchanger design Campater Aided Besign Centre, Cambridge Details Dr P. Winter, Tel: 1223 03423.

NOVEMBER OF THE STATE OF THE ST

Ching the Control of the Control of

Mundeville Hospital, near Ayleshury Bucks, 1045.

NOVEMBER 2-3

DIARY

He rettrad in 1989 but it was his company's success in the areas of constont-voltage transformers end signal generators that prompted a successful move by Gould Inc, which acquired it in 1974, into the related fields of power supplies and tast instrumontation. Can project management of automa-on systems be improved? — Colloquium. llon systems be improved? — Colloquium, Institution of Electrical Engineers, Savoy Piece, London WC2, 10:30.

OCTOBER 23-24 Software management, conforence. Amorean institute of Agromutics and Astroneutics/Rnynt Acronnuttent Society/Technical Merketing Society of America. Royal Jancaster Hutel, London W2. Octnis 01-242 4045. OCTOBER 23-25

Mint and micro forum. Online. Brighton. OCTOBER 24

A COURSE and workshop on airess and lysis entitled Nastran and tha Larger Structural Analysis Problem, will be held at the National Engineering Laberatory in Glasgow on November 13-18. It will be given by M. A. Gockel of the MacNeal-Schwendter Corp. Los Angeles and is designed for users of Nastran who wish to axtand thair knowledge. The NEL Univactiff will be used by participants to solve sel problems. For further datalls apply the Contenence Section, National Engineering Leboratory, East Xilbride. Glasgow G75 0QU, tel: East Kilbride (03552) 20222, ext 433. OCTOBER 24
Computers, an aid or an impediment to crestivity. Mike Cooley, BCS 1978 Lecture Serias. London School of Economics, London WC2 1030.

Meeting, 'The microcircuit tekeover — a new challengs for innangement', IEE's Microprocessor, Application, Group, Savoy Place, Londoir WC2, 14:30, Furthar information; Telephons 240 1871 ext 280.

OCTOBER 28 and control in OP, November 13-17; structurad programming techniques, November 22-24; and computer appraction for managers/users, November 27-28. All will be held in Worthing, Sussex. Octalis from Christina Polsk, Coursea Secretary, MSS Computer & Business Consultancy Lid, MSS House, 48 Chepel Road, Worthing, West Bussex.

oni evening. BCS Edinburgh branch. Mountbatten Bidg, Heriut Wati
University, Edinburgh. Ticket uniy. Detalls Petar Barkar, 03t -558 8455, axi 113,
Piato. N. Spooniey. BCS Tassida
branch. Teesside Polytachnic. Middleabrough. 19.00.
Reel time subtifling of tolovision pro-

Reel (Imp subtitling of tolovision programmes, L. A. Thomas, BCS Leicesier branch. Leicaster Polytechnie. 18.00.
An iniagratad DBMS/OOS.. Trevor Bankay, Geoff Rakar. BCS Databeas Usera Group. Naw Enginearing Block. University College, Loodoo WC1. 15.30.
OCTOBER 26
Ona day seminar 'Getting Into computing — for the distributive trade CDA and NCC. Manchester. Further details, George Kinnear, 1el 081-228 8333.
Oemonstration by various manufes.

Oemostration by various manufac-turers of recent equipment, BCS N Wifts branch, RCMS, Bhrivenham, 20,00. OCTOBER 26-27

OCTOBER 28-27
Operations group meeting, iBM Computers Usars' Associotion. Nawcostle Central Hotel. Nawcastle-ucon-Tyro. OCTOBER 27-NOVEMBER 2 Elactronic 78 — alacironics foir ond asminst. Association of Elactronics Manufacturers in Danmark. Belia Centra. Coperatages.

Copermagen. OCTOBER 10 COMBER 39.
Computers in Leigvision. Terry Smith.
BCS Cheltenham, & Glos branch. Queens
Holel, Cheltenham, 18,89,
Xrny computed tomography. E. Horn.
IEE Bavoy Place, London WC2, 18,00,
NOVEMBER 1.
AGM. CMC Users' Association
(CUMAC). Wigston Stago Motel, Leleestar, 10,30, Detoils: Maldanhead 28528.
NOVEMBER 1,2.

NOVEMBER 1,3

Section of the institute of Purchusing and Supply. Applications, preferably before October 24, or telephone reservations can be made with the institute in IPS House, High Street, Ascol, Berks, SL5 7HG. Tel. Ascot (0990) 23711.

Till, second international reconces marketing conference, covering serospace, defende and electronics, will take place in fluxesels on the conference in the second international reconcess in the second in the second international reconcess in the second international reconcess in the second international reconcess in the second in the second international reconcess in the second international reconcess in the second international reconcess in the second in the second international reconcess in the second international reconcess in the second international reconcess in the second in the second international reconcess in the second in requirements. Helads from AlAA Intern-national. To little at Marketing Conference, c, or State of the Art Lot. Victoria House, Saute 501. Southampton Rose, London Wr'1, (el 01-242-4015

Switchpoor is the title of a coderesce inguised by the histlation of bestern Engineers and due to take place on bloveniber 20.22 at the HT headquaters in Savoy Place, Youdon WC2 Architer injury media, various \$1% of and all circuit liteakers, and industrial applicatrops will be some of the copies treated to register write to the Conference Dept. If F. Savoy Place, London WC2R 881

A SI MIHAR in Drussels on performance A SI MITTALE IN MUSES on perconance evaluation of computer systems has been organized by IAG, the II-II Applied he hold on Movember 27-24. It will be readed for the Prof. by Hany Soding and by W. Materia Irom the department of informatics of the University of Defining. Further full cimation from IAG Head-quarters, 40 Paulus Putterstrad 1071 IIR Austerdam, tel 12.0 764526, 763581

CORAL NEWS which, in Computer Weekly, October 12, 1978, incorrectly carried the text from the first CORAL **NEWS** of January 12, 1978.

The correct text will appear October 26,

Programming Group meeting. IIIM Computer Users' Association. De Vere Hotal, Coventry. **LEASED LINES**

When with the excitomon of setting up the new offices in St. James's and buying a 3 magabyle 37D / 15D from on Italian Lank, J.R. has gone power crazad. Now he wants to set up a computer dial-rip service so that we can heve instant occase to clients' needs and exchanges. I aughestad bleckboard and chelk end a kind of hurt look come over his face ekin that of a religious zaalor. I suppose we sholl do it soon and will let you all

M.R.D. bought and sold come Model 5 IBM tape drive last Thursday and this is developing into a good line for us.

37D/148s are a very good buy at the moment and we can offer selection for you. The base price is 80% of 18M o now price. This means we sen lease a 1 megabyte 14B to you for the ostonishingly low price of £7.998. per month over four years. You can buy, leass or take a conditional with or without Government capital allowances. So, if you can the new "E" aeries. give us e ring.

J.R. has for sele some 3420 Model 8 tape drives and 3830 disk drives for sele. M.R.D. wants to buy 3350 disk drives. Mag. Well I just want to sell that 370/158 to pay the rent.

Will wille again next month



White House calls for DP shake-up

*UNLESS something is done soon to improve significantly the way information technology labeling used in the federal government, the general wellbeing of the United States will be seriously jeoperdised." That was the basic conclusion reached by President Carter's Reorganisation Project on Federal Date was the basic consideration of the DP reorganisation leam's final aummary report, which will be forwered for President Carter's consideration, was circulated last month among the 10 tack forces that contributed to the project. Revisions to the first druft will be made this month end the finel report is expected to be completed by October 31. The first section of the draft decement, called "Advocacy ment, improve service delivery

for Information Technology."

recommends that the Office of

Management and Budget should develop, by November 30, a Pre-sidential Reorganisation Plan

which would create a special

assistant of the President for

information and technology

policy, plans and programmes;

an executive associate director

Firms fight **US** govt controls

THE CARTER Administration must adopt a policy of "non-intervention in normal commorciei tranesctione" batwaer American firms end thair over sees customers, or suffor "irre-perable damage in the entire.

US economy."
Thet worning was leoued by the Computer and Business quipment Manufecturars esceletion in a targety worder

etter to Prosident Certer, The use of foreign trade as a political weapon hee circody "hermed competitive position in intermetional markets," wrote CBEMA president Vico Hanri elerence, Honriguoo obviousi was siming his romarko ot the 1110 system sola to the Soviet

news egoncy, Toss.
The CBEMA assecutive telet President Carter that foreign trade should be viewed as nn importent component of the country's netional wolfare, and not se a tool in political worfnen. Export dacisions should not be bosed on "euch othereal concapte se universal luman

rights," Honriques anid.
"The US shere of world exports has streedy declined from 18.8% in 1960 to 15.4% in 1978, and continues to do-cline," the CBEMA letter

It olso noted that Anterion's rolo ae the world's leading os-portered high technology gonds and services is being three tonori by other industrialiond antiono, citing Gorniany and Jopan in

Roxenne Williams, cheirfor information resource woman of the Interegency management policy within OMB; an information resource Committee/Autometic Deta manager in each depertment or Processing, claims that the first recommendation, et leest, will agency of the government; and o be dropped. "We certainly don't National Council for Informetion Technology Policy, Plans need one more government agency (ITP) telling us how to and Programmes, run our DP operations. All that The document suggests that would do is create more bureauthe Presidential assistant for ITP cracy end more work." serve as the "senior advocate fn information technology within the Administration."

Within the same section of the repart, it states, "Campuler communications and informa tion me becoming closely interrelated. Consequently, it is argent that the question of policy, which relates to them, be addressed together.

"The rapid changes the conputing and communications) reale phenomenal opportunthes foruse technology to reverse failures of government; to Imp-Jement programmes to mensure their cost-effectiveness and performance; to gain control of government frianclal operaions; and to implement innovative solutions to problems, the report states.

"There is an argent need to exploit and accelerate the deveforment of [Information] technology," the report concludes,

IBM split 'bid to get off anti-trust hook'

two units is the first step in a pinic by the company to circumvent US anti-trust threats by dividing the company late a number of outmomous unjorly towned subsidiuries. That is the view of Charles Lecht, president and founder of Advanced Computing Techniques, the New York respurelt and services company.

It appears that those who own 85% or less of o subsidiury cunnot be accused of monnpolistic practices, and Lucitt believes thet IBM Corp is about to turn this rule to its advantage to get off the anti-Irtist hnok.

Lecht postulates a probable seven eutonomous subsidiaries, each owned 85% by IBM Corp while the remaining 15% of equity in each is sold off to out-

There would be two foreign marketing subsidiaries, one for Europe, the Middle East and Africa, and the other for the Far est and each would continue to

become a aubsidiary, In addition there would be marketing to the and user. The three would be the naw Date Systems division devoloping and making H-aeries mainframe, Systems Products for the Eries, and one for peripherals. ... Lecht also ballaves that these three development and manufacturing divisions might also begin to sell hardware DEM to other manufacturers and aystems builders.

Students want research into micro impact THE National Union of Students

has udded ita voice to ling for more governmentfunded research lato the social effects of microprocessor tech-

The union has aent lettera urging this to Education Secretary Shirlay Williams, Employ merket the full range of pro-ducts. There would be a US and the chairmen of the Science merketing company for DP division producta, while the General Systems Division would become a subsidiary.

"We are seriously concerns three aubsidiaries would be about the job prospects of our three aubsidiaries which did no members. Said David. Aaronovitch, NUS Hatlonki sacretary, "Unlags all further end higher education courses are geared to technological shapes." change, the long term dereer prospects of many stydents could be non-existent.

"We want the faotia of

Britain to control fire and an interested in the properties of the publishment of the pub



PDP-11/34 for Dulwich College

A MAJOR stap in an eiready embhique programme of computes education has been teken by Dulwich Collegs, Sauth-seet London, in acquiring a complete PDP-11/34 system for etudents' use. Eight terminele, a mieture of DEC writers and VDUs, heve been installed.

with twa disc drives, a line printer, and a megnetic tape unit. Delwich has had a computing centre eince 1969, up to now using terminals to an outside buroeu. Dur picture shows two pupils warking in the terminal room which adjoins

the machine room.

The mechine is running under R978/E, sllowing pupils to program im Fortran, Besic and Assembler. The computer is also being used far a considerable amount of school administration.

School timetable planning software

timetable planning is available from Oxford Systems Associates (CW, Feb 9). Thie Is the Oxford Course Planning Aid, which is designed epecifically to help

FURTHER softwere for school with the problem of option grouping. In its stenderd version it ellows an unlimited number of students to select up to seven subjects each from a choice of in the stenderd version.

OXCPA, es it is called, is written in Basic and will run on a

microcomputer with 32K of The program costs £95

Data Transmission Managers

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and maintain our world lead in a

technology which holde the

Various members of the reor-

ganisation project heve voiced

their disectisfaction with the

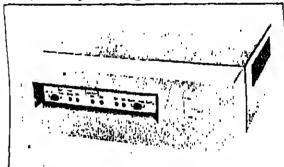
keys to a new era."

dreft recommendations.

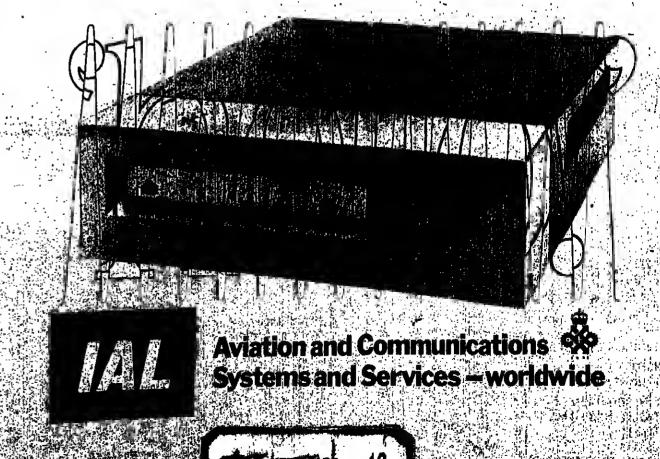
All reaccidentational leader in data communications, It provides a brilliantly comprehensive, continuously expanding range of data transmission. equipment; compact, flexible, state-of-the-art equipment tyrsed on a unique understanding of user needs and indeed, on a list of international users which is itself Inticipe.

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DIAL IAL For fuller information on IAL data communications equipment and services and the network of IAL bases throughout the world, telephone 01-574 2411 or write IAL, Aeradio House, Hayes Road, Southall, Middlesex, England UB2 5NJ Telex: 24114 Cables: INTAERIO Southall.



BCS 79, Living with Computing. In this series of articles, the work of the epecialist groups endtheir BCS 79 plans are described. This week the focus is on word processing and its implications.

tion and printing. It thus embraces text preparation on terminala, conslating of keyboards, with or without VDUs and with or without hard copy devices, and its dissemination over telecommunications links or through the mail to other similar devices or to the final recipient in an appropriate

number of copies. This is an area where many changes are taking place as a result of the introduction of modern technology. Replacement of typewriters by word processors extends the capability of typiats to handle work, particularly repetitive work and the retyping of drafts. Indeed, estimates for increased productivity range from 25% to 40%. This has clear implicationa regarding the reorganisation of office work, and may well lead to a significant loss of job opportunities, if not to octual unem-





continuing exponsion in over many years.

Moreover, the possibility of linking word processors over telecommunications, and of extending their capacity to hondie files, is considerable. The linking of local systems can be done in auch a way as to allow the preparation of a document on one machine and its reproduction subsequently on one or more remote

machinea, thua passing ovar tha telecommunications link what might otherwise be produced as local hard copy and sent by mail. Finally, the processes of

reproduction in hard copy are undergoing change with the introduction of cheaper and more effective photoaetting eauipment, which is Itself computer driven. There is an increasing tendency to carry out printing in-house rather than sending it out to printers, and to integrate this printing into a more general procedure for reproduction of documents using, for example, photo-

out an owareness of them.

NPL to discuss the Impact of

schemea such as SCRAPBOOK

and of their fast laser-driven

output equipment. It is in-

tended to continue to keep the

manufacturers' offerings

under review in the coming

Today's*

copy.
While it is not the primnry making visits to such related projects as Inspire, the IEI role of the Group to explore all the social consequences of system for dissemination i technological information. these significant trends, The presentations neverthelass it is impossible to discusa word proceasing with-

Junuary will reflect the range of interests of the Group, with a general discussion of equip ment by Brion Parkinson and : The Group naturally has as its primary interest the extalk on its application in Unitever by Alan Patterson, folchange of experience regarding hardware and software lowed by more general discus sion, which may well touch up included in word processors and of know-how with regard some of the social issues mento their choice and introductloned above, since one of the tlon. However, in the last year panellists is Barry Sherman of we visited not only several manufocturers but also the It is hoped that a number of

exhibitors will be showing of the tricks that can be per formed with word processors both during the more technical part of the conference and on the Saturday popular pro

NEWS IN BRIEF

Europe debut

Europe is due to be delivered ut the end of the month to the European Centre for Medium Range Weather Forecosts at Shinfield Park, Reading, Berks. The one Mword machine will take uver frum the Cray 1B, 500,000 word installotion at the UKAEA Rutherford Laboratory at Chilton, Oxon, on which ECMWF programs have been developed. That machine will then be used by the Defence Ministry until the Crity IA urdered for the Atomic Weapins Research Establishment at Ahlermaston (CW, April 28), is the livered early next year.

LAUNCHING o enmpulgn for loping alternativa solutions,

Micro version

A VERSION of Algoi-60 deslon, which will cast £99

Wake up to micros

microprocessors" is the Intention uf a conference heing held on November 27 by Stockport Education Authority. The concrence will be aimed at local ndustriniists as well as taachers and ndministrators, in order to deal with the way business may be affected by new methods of automation, and huw this affacts the training that young people need. Owing to limited dcoommodation, littendantie, tilre of high technology panish

for Cray 1A THE first Cray IA aystem in

'Relax rules' plea

reinxation of expurt rules for computers to the Eastern blue, the US Computer and Business Monufacturors Association lins goined backing from u study by tho Bruokings research institute which points out that the business ganorally gous to ather ment familial badies should be Westorn countries, and even in the caso of odvanced military computer systems, the Suviet Union was capable of rieve-

signed tu run nn Zgo-bosesi microcomputers under the CP/ M operating system is being made available by Reacarch Reading RGI 8PN Machines. Tn complement it, DEC PDP-8 and PDP-11 machines ua well. The Z80 verrequirea n minimum of 20K hytes, while the PDP versions, costing £250, require EK words

"A BLAST to wake up pcople in education to the impact of will be by invitation only



chaoŝ YOUR correspondent I. Drummond (CW. October 5) asks whether the establishment and maintenance of professional standards in computing should not be left to employers instead of other bodies, because so many of those involved in computing are in employment rather than heing self-employed.

it to

bosses

I think the place of employment or whether one is self. employed have nothing to do with the matter. The fact that most engineers, for example, are employees does not lessen the need for standardising and professional hodies in engineering. To leave such functions to thousands of (competing) employers is to invite chaos, and anyway the employers' interests are not always the same, between themselves and vis-a-vis

Where I am sure that Drummoral and I agree is that employers have a vital role to play in the establishment of standards and their malnienance thereafter, and that it Isin their interests to lave staff who are fully trained.

PAUL SAMET **British Computer Society**

packages

I WLIDLD like to correct certain Information given la the article on Survey Analysis Packages (t.W. September 28). ASCOP. 1C1. Dataskii has 10

direct connection with this puckage. Dr B. E. Cooper, the nuthur of ASCOP, who now works for Dataskli, may be able to unswer some questions. We the not knew from whom informutten should now be obtained. DAS. Information from ICL Datuskil/local ICL office.

PACKAGE-X. Requests for Information from UK governaddressed to CSO. Requests from other people should be addressed to ICL Dutuskil.

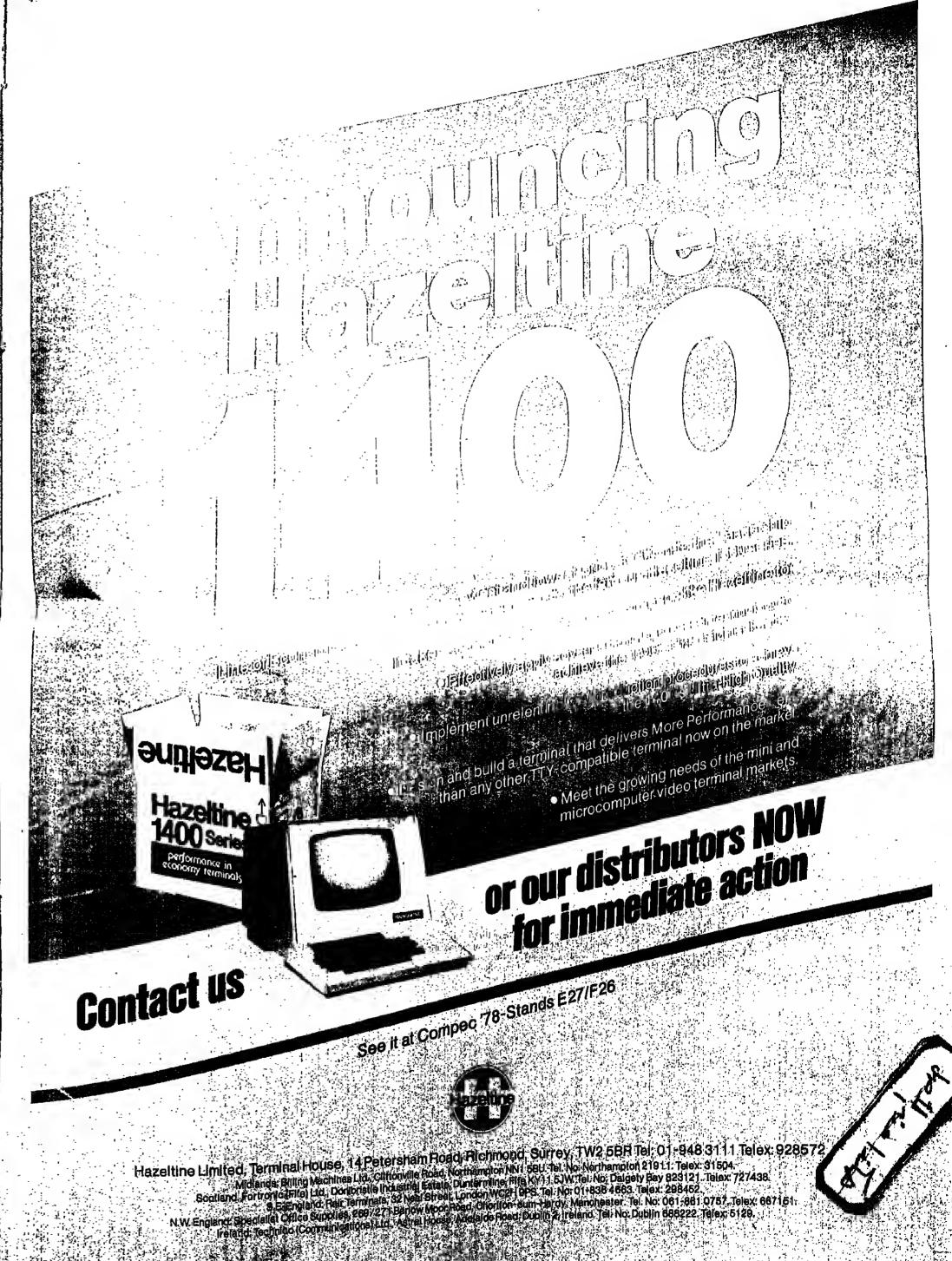
XDS2/3. Information from It.1. Datuskil/lucal ICL office. XDSE. Information from ICL

Dataskii/local ICL office. A. E. THOMAS Munager, Dato Analysis Unit Advanced Systems Sector ICL Dataskii Ltd. Rending Bridge House,

The Editor welcomes letters o bjects published in Confe Waekty, or on original to All letters must be acc by the writer's name and a drass, not nacesserily for publication. All latters are lishe to be cut at the discretion of the lenters for, unless correspondents site that their letters may be be cut.

Eighth UK plant

AN eighth UK plant is planned by Burroughs, oltimately offering employment to 200 people. The 100,000 square foot facility is to be built at Living stane New Town in Scotland and will become in contraction design and plantifications of the contraction of the c mindueta



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g it in, link it to a 'phone handsel and lhe

that's the Model 745 Portable, from The "Silent 700"

representatives immediate access to computerised data

745 is ready to send or receive up-to-lhe-minute data. You can then make instant decisions based on reliable,

can enter soles orders or print out complete reports in

seconds on your slock, delivery limes, prices or delailed

our flexible leasing prngramme. And you can depend on

with udditional back-up from its distributor, Ti Supply.

responsive support from TI's national sales force ...

to handle small quantily immediate deliveries.

in your customers' offices, for instance, the 745

You can buy the 745 at altractive prices, or use

series of electronic data terminals. Il gives

wherever there's a telephone and power point.

THE

TEN

FIRST

YEARS



pENTHDUSE Pets Larrains Hanson (left) and Lynne Rolph were among the attractions in Luton, lest wask, when the laber-Woods computer shop officielly opened its doors for business. The shop, at 110 Lacgrave Road, handles Sol, Gromameo and North Stersystoms, via distributor Comert, together with Apple lis from Personal Computers and the other type of Pet,

Goonhilly to test speech squeezer

Consultants describes the digital peech interpolation equipment has developed for the Post Office, and which is now being inatelled at the Goonhilly ground station for working tests

Using a complex distributed multimicroprocessor approach based on seven Texas Instruments TMS9900, 16-bit chips, the quipment has been designed to double the capacity of time division multiple access, TDMA, links without adding to the psce segment costs. To achieve this task, the sye-

tem worke dynamically salzing and re-ellocating channels during conversational pauses, ao halving the number of chennels required to handle a given pool f speech eignels.

Included in the £200,000 development contract placed by the

build a speech activity simulator up to eight sub-bursts from the so that the system chuld be DSI systems attached to the ground station. Based on two Intel SBC 80/10

The suh-burst conteins the 120 satellite chunnels being microcomputer eards, this has to simulate the speech activity of trunsmitted together with an up to 240 terrestrial channels. assignment message which, The aimulation is based on when received at the receiving atored statistical distributions of ground stotiun, gives Instrucvarious parameters found in a tions on the changes in routeing typical conversational pool. To of the satellite channels, evaluate the Interpolation

Changes in channels are made on the basis of voice activity on the channel, and the level of demand for channel access. When the demand from the 240 terrestrial chunnels exceeds the capacity of the 120 satelite channels, voice uctivity is monitorcil. Unused channels at the time of each sub-burst ere then switched to another terrestrial channel. This process is repeated with every sub-burst.

Several other countries are testing similar systems, but the majority of these are based on single minicomputers controlling the whole operation of speech interpolation. By going to a distributed micro approach Cambridge Consultants feels This data is mude up of a pre-amble, which gives such infor-mation as the transmitting that the Post Office, though later in the field, may well have got a hetter deal.

data transmitted at a rate of 5125 Mbits per second.

equipment, one or more test

channels ore monitored cun-

tinuously while the simulator

loads the equipment with

The husis of the DSI

equipment's operation lies in

providing accurately timed

bursta of data within the TDMA

time frome. The frume itaelf is

750 microseconds in durotion,

and consists of bursts of data

transmitted to a sotellite from all

the ground stations within the satellite's erea. Each burst is

timed to arrive at the sotellite of

a pre-determined point within

the time frame, and consists of

dummy traffic.

available off the shelf at o price of \$20 per set at the 100 off level.

signed in collaboration with aeverol major telecommunicationa equipment inunufacturers, both in the US and Europe, and meets both US and CCITT specifications. The chips contain all the necessary elements for a complete aingle chunnel pulse code modulation Codec, providing both input and nutpitt aample and hold, nun-linour digital convertor, comporator, on-chip voltogo reference, auccessive approximation logic, I/t) buffers, autn-zero circultry ond

The chips sample u filtered

mulipping signal nt an 8kHz rate, converting it to an 8-bit digital code. This can be transmitted a nuv data rate between 64 and 2,100K bits per seconds. The Initial market seen for

Off-the-shelf DG stockist

THE availability of 10-bit microcomputers from the traditional minimakers is making new marketing methods essential, and Data General in pioneering the use of stockists who can offer off-the-shelf delivery of Itema

in the UK Deta General has appointed Celdis of Reading, part of the £33 million Unitech group, to handle the MicroNova and associated integrated. circuite, system eoftware and

This month, ICL celebrates ite

tenth birthdey, although the

history of the company is

much older, because most of the pioneers in British com-

merciel computing, like

British Tabuleting Machine,

power-Samae, Leo, Ferranti,

THERE have been many totle-

stones for ICL in the last ten

years, such us the Singer

acquisition in 1970, the arrival of

Geoff Cross in 1972, the launch

of New Range in 1974 and the 2903 in 1973, in the view of the

current ICL managing director

Dr Christopher Wilson, which of

these was the most significant in

Dr Wilson passes over all the

stead goes for something much

"The most significant change

came when the company storted to believe in itself, and I thouk

that happened about six years

ago. Once people start to behave in themselves, it pervailes the

whole company. People started

going into contract negotiations

expecilng to win. There is no

merlt in coming second. You

have to win in this game: to he

placed second where you used to

Dr Wilson will not be drawn

"It is up to the outside world

lo comment on our mistakes, tri

course we have made mistakes.

but the important thing is to recognise them and take steps to

Was the delay in introducing the DME facility for 1980 and

System 4 users to migrate relatively painlessly to 29th a mistake or a dellherate policy

"I think it was policy and was the right filing to do," says Dr

Wilson. "The most important

thing with a new range is to get

people using it in untive meale as

quickly as possible. And myway

the microcoding techniques

which enabled us to develop

DME were not really there much

earlier, I think that DMF, was an

opportunity taken ut a time

then we wera in a position to

Dr Wilson is niso convinced

that, far from being a mistake,

the introduction of New Rouge

"The 1000 and System 4

The 1000 and System 1 standingly now: you con tolk standingly now: you con tolk shall stacks, virtual monorles

since the early 1960s, whereas and so forth, but the atrongla

with 2900, we have a good pos-ture for the 1980s and 1090s. We

might have derived some short-torm benefit from developing being added as afterthoughts."

been limited, and it would not managing director of ICL II

lensive product line combining ance of services in the continued

sod quality software with upto-date hardware, and I think it
is o plus pulnt for us over the
competition, most of which is
sill selling each 1999.

was essential for the company.

1900 further, but it would have

have helped the System 4 user.

"Wo now have a now and ex-

rectify thesa quickly."

come sixth is no good at all."

on the reverse side of the coin.

block-busting events and in

ICL's 19-year history?

Elliott Autometion end Merconl hed contributed to

forming ICT end English Elec-

tric Computers, the com-

psnies which merged in 1968

in Computer Weekly's ICL

No merit in

birthdey feeture, Tim Pelmer

coming

to form ICL.

company.
"Ouring our growth, we ware necessarily rather insular, but ICL necessarily rather insular, but ICL necessarily rather insular, but ICL necessarily rather insular new. In five

We have a responsibility ax-

scheme; that breaks down into

major growth srea for ICL ser-vices, and that includes

second'—Chris Wilson

AHEAD

have to be shoud of the field in somo

interviews ICL's current

mensging director, Dr Chrie

Wilson, shout ICL'e echleve-

ments in its first ten yeers end

his hopes for the future (this

page). And on peges 16 and

17, Fred Lemond enelysee ICL

product strategy.

"We need bigger treining cen-tres in Europe, and we are meking a heavy investment, but nowhere near the scale of what we are doing in the UK," he says. "Overall, Dataskil is about doubling its turnover every two years, and the opportunities for setting up e Dataskii operation in each country are good. I be-lieve it is quite possible to build up e sofiware, systems, applica-

tions and perhaps turnkey con-

trects company from scratch,

but bureaux are another met-"I think it would be difficult now to start bureaux from nothing, and acquisitions lead to traumas. In other parts of the world - Australia, New Zealand, Singapore, South Africs, Nigeria, Zsmbia — we have

hureau operations. "If the right upportunitles for negulations occurred in Europe, we would consider them, but

they ore not part of our plan. "It in estimated that, by 1961, the total European expenditus on all aspects of doto processing will be £15,000 million, and the 30 people on 20-weak systems onalysis couracs and 40 people services element of that is enoron 10-week progrommers' mous. The opportunity is there, and we can increase our share 'Once we have trained them, by dovelopment of our own staff wo endoavour to placa them, and I'm told that we have had ond by Dataskil-type opera-

100% success in finding jobs for Like hie predecessor Geoff the people we have troined Cross, Dr Wilson believes firmly that the single-tender policy for computer procurement by the government is vital, not only for CL but for the whole UK comnuter industry and indeed the for company directors, which ottempt to demonstrate to them nation as a whole.

He goas further. "I believe that the EEC should have a procurement policy, because I think it would be quite wrong computers in 10 or 20 years to be



THE two biggest problem merkets in ICL's warldwide empire todey would appear to be South Africa and the US — the one for reasons of outstending success, the other for comparative failure.

"I do not necessarily eccept the statement that ICL le likely at some stage to have to withdraw from South Africa. Our jab is to run the company se effectively and efficiently as we can, and South Africa is the same as anywhere else. We always operate under the lews of the countries where we do business, and under the law se laid down by the UK

and do not feer that we will lose business in higaris: the Riggrianc trads with South Africa the one for running to the United States, ICL's embitions there seem to have become more modest over the past year.

"I do not see ICL in o ever four total business, and it would be quite happy in five years' time to see it a small, profitable company doing about £30 million a year," says Dr Wilson.

"We found that we will lose business in higaris: the Riggrianc trads with South Africa them."

Turning to the United States, I'L's embitions there seem to have become more modest over the past year.

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"We found that we will lose business the Riggrianc trads with South Africa them." the law ee laid down by the UK

"We have hed a request from the South African government for licances to manufacture some of our products there, and we are considering the pros and cons of a

cending sgreament with them.
''Our business is running st close to £50 million ennuelly there. This makes the subsidiary e little bigger than ICL Franse, but not much. I am not ewere of any African country threatening a boycott of our products because of our South African business,

reorganisations of the industry.
"I never get involved in discussions about bringing companies together," he says firmly. "I think it is vary dameging to

tha companies involved to telk about it, and people who do constantly telk about it are often insecure about thair own The major challenger to any

computer manufacturer la, One is to copy alavishly every product that IBM introduces in the hope of picking up crumbs from the glant'a table. The other 7.5% (Igure at which repayments of the \$40 million development loen for New Range a major factor in IBM's aucoess

computers in 10 or 20 years to be looment loon for New Kange a major factor in IBM's aucoess. Americe or Japan.

When the rules soveroing: Dr. Wilson will only say that lead by that phenomenon of the computer procurement by EEC his responsibility is to run the German computer industry, governments expire in 1980, I company in the most effective Heinz Nixdorf. Dr. Wilson's believe that the EEC should manner for the benefit of the substitute a Community wide shareholders — which include same lines. "The rental and service ele

IBM370 and 303X users...

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National Semiconductor launches Codec chips

A QUIET entrant into the mar- analogue portion is executed in ket for Cudec chips has been the rumpany's Bifet process. National Semiconductur. Even These processes have been though the devices were formally announced only last week, they have been in production since January, and are now libth processes have been in use

The twu-chip system, de-signated TP3000, has been de-

the necessary control logic.

Two versions of the sot orc aveliable; the TP3001, uses the whunt \$9 to produce, so even ifs u-law coding for nnalogue Codec set cust \$3, it is still not signele, and the TP3002, using

chosen primarily because the long enough to acquire a loag cumigh history of reliability

those chins is in local exchanges. according to Kuri Slem, Nationul's director of talccommunicutions marketing. The ldeal situation of having one Codec per hundset he sees as being some way off. "There sre ungineering problems that go against using Codecs in lelephone hundsets," he said. "ond in addition there is the cost fuctor. A handsot currently coals

A-lew specifications.

National uses a CMOS process to implement the digital functions of the circuit, while the

still selling early 1060s orchitecture, apart from Burrnughs and NCR. There is a limit to the extent to the case of the color of the co tent to which now hardworu technology can ho odded to uid architecture.

nove provided 1,000 Manpower uf treining under the Manpower Services Commission's TOPS scheme; that breaks down into

As well as the MicroNovs chip, Data General mekes its own 10K RAMs; there is for official second-acures for either:

Data General appointed Schwebor as its US distributor last year, and plans to appoint distributors for MicroNpva pro-

ducta throughout Europe Ceidls will offer nost devices for immediate delivery and cleims that 96 per cent of paris ordered by 4pm go into the post the same night: Date General peripheraie,
Celdis already markots a wide range of semiconductor devices from companies like Motorola, Fairchild, Mostek and Nippon Electric, but the MicroNova is the first 16-bit device handled by period be one off orders from the company. It has \$2750,000 of parts in stock and is investing an initial \$100,000 in Data university involves medical, petrochemical process medical, an initial \$100,000 in Data university involves medical, petrochemical process medical petrochemical petroc



"There is no une thing which

you can identify in 2000

architecture as boing out-

Frum thu day ho tunk over os

months ago, Dr Wilson hoe con-

DR WILSON is keenly ewere of the new responsibilities imposed by the formidable growth of the

is a large company now. In five years' line we will be a £1,000 million concern, and few other that

lensity as well as internelly, and we need to be more outward looking. We see a lidt of people from both major parties from time, and as the computer inersalingly impacts people's everyday lives this becomes hebre important." says Dr. Wilson. Although of fice automation will become a more important prof. In the fulling of the people in the peo

company in five years

done. "Thing" " a he 3780

telaphone evra ling system
the should be left to freecy.

We will engoine our new
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"We ere niso pinnning to stoge

high technology sominors and

wo alroady hove development

seminors over two or three days

how they could use computing

moro effectively in thois

done in the UK, but we have

about 240 lecturers on our staff,

operating in 30 countries." Dr. Wilson has already identitified Continental Europe as a

spread too far in the US, end we

ieva dons some retranchment we ere also reviewing ou relationship with our desiars.
"We are selling 1800 and System Ten 220, and market the 2903 in a slowly widening erec around New York.
"We need a recognised pre-

sence in the US to essist ou credibility in the rest of the world cracipility in the rest of the world, ond eventuelly we shall introduce the large 2800s there in a con-troiled monner. Solling 2600 in pertnership with a US company is not now being considered."

terference from them, and they eren ot represented on our board directors.

'Government Involvament ICL was significent four or five years ago, and it csuned probleme in overseas marketing, ecauee customers got the impression that we were e falling company propped up by the UK government. But that imoge ie rapidly diminishing

There have been widespread euggestions among investment analysis that heavy investment in its rentel base and in research and development will enabla ICL to keep its profits below the

policy similar to that of the UK the government through the government."

Dr. Wilson diplomatically declines to say whether he regards ments that have been mooted the 53% Friench-owned CII- are en amalgametion of ICL,

Bold gamble to win TEN YEARS the information market' of the 80s

AT the time of the 1968 merger, the announced modals of the 1900 Series and of System 4 psraileied each other all the way from the price-performance the 360/65, See Table 1.

The customer bases of the two series were much more compledominated the British and Commonwealth markets for small to medium sized systems, but the largest systams inatalled in any number ot that time were the 1904E ond 1905E, as well as the aarlier 1906 and 1907 of roughly equivalent power. Deliveries of 1904F and 1905F systems were only just beginning, and those of the equally powered but more advanced 1904A were not due to begin until 1970.

As for the radically reengineered 1900A, announced in Septembar 1967, it was at that time little more than a paper tiger which had collacted no more than a aingle latter of in-

English Electric Computers customer base, on the other hond, lay mainly among a small number of large users, notably the Post Office. Deliveries of 4/70s had begun to reploce esrlier KDF 9 and LEO 326 systems. and orders for this top of the range system were quite subsigntlal. It was at entry lavel that the 4/30, whose design had been aubcontracted to Marconi as part of an internal English Electric political battle, had been aomewhat of a disaster

Since the Ministry of Technology's main reason -for pushing the two surviving British mainframe manufacturers into a merger had been to eliminate wasteful duplication of development effort on Identically powered products, ICL could thus have undertaken taken sback by this unnecessary some immediate drasile pruning of its product line without upsetting any customers.

did penalon off the 4/30 as fast as outstanding contractual commltments to Morconi parmitted, and converted the small number of 4/30 users to 4/50 systems by system field clear for the successful 1900 Series.

At the top end, no one outside West Gorton would have missed the 1906Alf ICL had then quietly withdrawn it. The ennounced power of the 1904A gave ample top cover to the axisting installed 1900 user baae, and it seemed likely that processor design could in tima ba stretched components, as indeed it was in bettar single batch program the 1904S sunounced in 1971. bettar single batch program the beginning of 1974, at pre-the 1904S sunounced in 1971. bettar single batch program the beginning of 1974, at pre-the 1904S sunounced in 1971.

Beyond that, the obvious growth path for medium size 1900 users and the more substantial number of 4/70 users lay to a large 32-bit word processor that would have implemented a superset of both the 1900 and System 4 order code.

Such a joint superset procas-sor would not have bean very difficult to dasign, For apart from their dissimilar data structures, 1900 and System 4 processor architectures were really quite close (Table 2). Both used a "one-and-half address" type of processor logic, in which one operand is fetched from an indaxed main memory address. while the other is fetched from, and the result stored in, one of a small number of general purpose regiaters, some of which can niso

be used as index registers. Within this common design philosophy, System 4 had that more complex architecture of

the two series, offering notably a larger number of registers of greater width, and a larger range f arithmetic operand types.

tt would thus have been far easier to emulate the 1900 machine code on a System 4 processor than the other way around. The only instructions that would have to be added to System 4 300-compatible machine code were the 1900 indirect addrassing facilities, in offers an even greater diver

government was subsequently to belradues

elngle-lender policy is fevour ei ICL

Large models in the ATLAS plus

calagory in which the Stillsh

ladium-tizad models

ICL offer at least one equally homogenous computer family from bottom to top.

These 1988 ramarks acquire their full flavour when read in tha costext of iCL's current product range 10 years later System Ten and 1500 series scquired from Singer only two years ago, ICL's successor 2900 s

Sysism 390

the iBM 360, it was essential that 2900 series is in fact a wholly new general purpose computer patible other than via conversion sids with either of ICL's two computer families of 1968.

iCL is the only major mainframe manufacturer to have introduced such a new series in the last 10 years, and the only one to have imposed such an

eries rsity		e source program brarlea of ita larg-
	· ic	L
)	System 4	i 900 3erles
i7*	-	
	4-70, 4-75* - 4-50 4-40	1904A/F, 1995F 1904E, 1905E 1903A

1901A

Table 1: IBM and ICL product lines in 1966 in rough order of processing power. Time shering model with virtua

ware notorlously deficient.

It was thus with considerable surprise that I learned at a premerger briefing for English Electric Computers staff that, he 1906A and basing ite futura large machine davelopment programme on a System 4/1900 superset, ICL proposed to add an even more powerful 1809A to the top of the 1900 series to en-

courage 1909A sales, The Ministry of Technology seems to have been equally perpetuetion of two rival bi machins designs. At the product psetting any customers. briefing that they received, one At the lower and it could and of their senior officials is said to have remarked: "Now you have made our task more difficult".

Tha 1908A was duly announced at IFIP, in Edinburgh, in August 1968, but elicited not the slightest govarnment interest or orders. A year later it was withdrswn, after ICL had internally decided on Project 51, that was to become the 2900 series.

The i906A was not withdrawn, however, but was forced on British universities from 1671 to 1974. They received it with all the anthusissm normally reserved for a dose of castor of that 1906A architecture gava s drawn from tha ICL catalogua at

Tha 4/70, like the whole of the System 4 range, had much better nterrupt handling facilities, and many univarsities might well hove preferred these for their Internel timesharing networks, But those that had not been allocated their funds in tima to place System 4 ordera befora August 1968, wera never given

Undar ICL's segls, System 4 was largely limited to existing users, to the byte-oriented Eastern European market, and to special real time projects such as the London Airport Cargo Entry System, LACES.

System, LACES.
On questioning this decision with ICL at the time, I was told that withdrawing the 1906 A would have greatly impaired tha whole 1900 market credibility at a tima when ICL depended on it for three quarters of its revenue. To compete auccessfully against

which the IBM 360 and System 4 of processor orchitectures than System 4 and the 1600 did at the time of the merger

From entry level to the middle price range, the 2903, 2904 and 2950 and 2960 systems running under DME perpstuate the old 1900 processor architecture, order code, systema and applications software. The market has smply rewarded this continuity by a flood of orders that exceeded evan Geoffrey Cross' demanding sales targets.

More than 2,500 2903s and 2904s have been installed or ordered in tha last five years, making them ICL's most successful computer systems ever. Nearly 40% of these orders and Installations have replaced other monufacturers' computers on users' altes, mainly IBM System

The largest 2990 configuration that csn run under 1900 DME, however, offers no greater main memory and only twics tha throughput of a 1970 1904A; small businesses that have instailed 2903 systems in the last five years, but woefully restrictive for any larger 1900 user who might have been running s 1903A or 1904E 10 years ago. But the 1606A and its later and faster The justification for this was veralon the 1909S were with-

> nercisi usars might nev begun to require its power. Instand, 1900 users who have outgrown tha maximum expan-dability of a 1904S or 2990 DME system now have to convart their source programs and data files to the 2900 series native

mode and VME/K or VME/B, This is as 8-bit byte and 32-bit word oriented as System 4 was, But whereas System 4 processor logic was fairly close to that of the 1900 series and could thus have emulated the latter quite efficiently, the new 2900 hative mods uses a totally different puahdown atack processing architecture that resamble rather that of the Burroughs

B\$x00, B6x00 and B7x00 series. Tha VME/K and VME/B operating systems and their sys-

4-30

Why did ICL do it? According to a senior product planner, 1900 architecture would have had to be fundamentally redealgned to meet British government, unlversity and largs user needs for systems in the 370/168 and 303x class. Such a redesign would still not have produced the most cost effective application of the available components.

System 4 could have stretched te eosily, at least up to IBM 3033 size, but was ruled out as an IBM 380 "me too" system that would have tled ICL down to IBM system concept Imitations. It was felt that the company should differentiata its product lina far more from IBM's to give

usars a real choica. ICL product planners chose to mske s wholly freah start, unencumbered with the constraints of either 1900 or System 4 architecture, to address what

requirement of the 1080s - Inrge information systems, concerned far more with database inquiry, updating and manipulation. than with the calculation tasks of the traditional Von Neumann

It was in order to fulfil these tasks as efficiently as possible with the minimum of user proramming effort, that ICL degned the 2900 series with its rtual machine concept, multivei Indirect virtual memory dressing, 4,000 Mbyte address nge, and pushdown stack pro-

It was a bold and Imaginstive ap which one hestitates to ndemn. iBM was beginning at at time the development of the S series and the Q operating stem with much the same ms in mind, if it had succeeded in bringing these to market in 1976-1977 as planned, iCL could only have survived on the mainframe market by offering its users on equally imaginative systems design.

Both iBM and ICL scent to

have underestimated the throughput buttleneck cuused by attempting to implement so many different functions on a mainfrome operating system, as well as the time required to implement such an operating system efficiently. But when IBM came up aguinst these obstocles in 1974, It had enough contingency plons in its drawers to be able to cancel FS and Q and write off the millions

spent on than to experience. ICL, on the uther hand, seems unwisely to have committed its main R&D resources much too soon to the new series, and silowed both System 4 and 1900 Seriea hardware to wither on the vins from 1972 onwards. Apart from semiconductor memnrles Introduced bstwaen 1972 and 1974, the last 4/72, bullt in 1975, and the last 1002Ts and 1003Ts,

1800 and 2800 DME	System 4	2900 Netlys Made
24 24 46	16 sr 32 32 sr 64	8 6, 18, 32, 64, 128 32, 64 er 128 1-31
	18 18 15	8
24 n 15 ar 22	32 n 24	128 32
24 - 24	18 - - 32 48	16 32
32K, 258) or 4M words 32K, 256)	(18M byte	256K bytes 64K or 4,000 Mbytes 4,000 Mbytes
32K word	t 8M byte	s 64K of 4,000 Milytes 64K of 4,000
	2800 DME 24 48 	2800 System DME 4 24 5 24 18 97 32 97 64 - 1-31 8 18 18 8 18 18 24 1 32 n 15 or 22 24 24 18 - 24 32

tems control languages are also quits different from both the Table 2. The general purposs architecture of ICL machines. Notes: 2900 George systems and Sys. na Number of children GP registers. Maximum capecity of variable langth tam 4 J and Multijob. The large pushdown stack allocated to each program argment.

were seen as the main large user in processing power, main memory expandability and perinherals from their predecessors of 1968.

The restrictions this caused or both System 4 and lurge 1900 users' ability to expand caused them to put increasing pressure on iCL to announce its new

When ICL dld launch the 2970 and 2980 in November 1974, It was much too early In the VME/B development cycle. Their early users were soon about the new system's low throughput and MTBF. According to one 2970 user, It is only now, four years after its hunch, that VME/B allows him to get the same job throughput on his 2970 as he was able to get on his 1904S using George 3. This has given the 2000 series a had asme in the marketplace, which it will take n long time to live down.

ICL seems also to have walted much too lone in the 2000 series development cycle to give serious thought to ways of bridging 1980 and System 4 users to the new series.

Microprogrammed emulators dld not become available under VME/il on the 2970 until 1976; and DMF, to allow 2960 users to run the system entirely as o 1900 or System 4, until 1977. And DME does not allow 1900 mode users any larger main memory space than they would have had

In thus forcing its large users to canvert their unin source programs and data files in order to be able to grow, iCL product planners nut only disregarded those users' interests in their Investment in source programs. they also ignored the prime rule of computer customer base preservallan; to make it at all ilmes easier and cheaper far cuslumers to stay rother than to

desert to the competition.
As a result, iCL has in receat years last a much larger propor-tion of its big systems users then nther mainframe manufacturers when those users reached the maximum expansinn limits of their old systems. The lost causes include British Oxygan, Plikington's, Leicestershire County, Gloucestershire, GLC, Tesco, Norwich Union, to name,

ICL's total shars of the UK Installed computer bass by value is reckoned by IDC Europs to have dropped from about 35% in 1988 to 28% in 1978, During same period, Siemens share of its West German home market rosa from 8% to 18% if ona Ignores the 5% ahara inherited from Telefunken Computer in

In private, ICL axecutivas are aometimas prepared to dimit these days that they would have had none of this frouble in the isst 10 years if they had gone for the safe solution of basing their large systems designs on System 4 or a System 4 + 1900 suparsel. But in the 1990a, they say, their boid gamble will be justified by events. Then ICL will have a stabilised product range to offer at a time when other nainframe manufacturers will have to convert their hardware. have to convert their hardware architectures to tackle thair architectures to tackie users! Information ksystem requirements ICD will only be able to regain.
Its lost market share at other a

When ICT and English Electric aumounced their intention to merge their data processing activities in April, 1968, they undertook to continue to develop both the 1900 Series and System 4 to meat the needs of their respective customers until such time as these two ranges could be superseded by a common successor range.

The unstated but generally understuad maoning of that promise was that the future common successor range would offer both System 4 and 1900 users a smuether apprading path than a farced conversion from System 4 to 1900 standards or vice-

In this 10th anniversary feature Fred Lamand examinas how far ICL has kept this promuse in its users, and how contant these users have been with the new 2900 series.

manufacturers' expense, howler und cheaper native mode ever, if these are equally unwise and unlock their customer base by forcing their users to convert their source programs in order to grow. Nothing is less prob-

Honcywell has already demonstrated on its Series 60 low many different processor hardware architectures can be accommodated under a contmos operating system with upward compatible JCL. Now IBM is planning to use OS/MVS as the cloak under which to repisce the centralised 370 architecture by a more modular multiprocessor design, in which 370-compatible "processing ongines" co-exist with specialised back-end database inquiry:

updstfag "engines", and others. Such schemes preserve existing users' applications software investments, as iCL did not, so that those and the lorce of Inertia will tend to keep most of them loyal to their current

back a larger share of the private commercial and industrial large user market in the 1980s, it will not be Because of the stack processing architecture and 4,000 Mbyte addressing range of the large 2900s, but because they will be the first mainframes on the market that can be equipped with truly parallel processing Distributed Array Processors (DAP) and Content Addressable File Stares (CAFS).

These are truly worthwhile revolutions in compating and ICL can be proud of taking a world lead in them. But It'l. could have fitted DAI's and CAFS just us easily to large syslems developed from the 370much easier such systems would then have been to sell to the huge enstumer inese of 11tM 370 and compatible system users.

Meanwhile, while the burge its income unil profits have been well as by the System Ten and 1500 series bright from Singer. large 1600 users in the 1970s.

2930 and 2940 systems to market running under a more compressed VME/K. Nor should it attempt to convert 2950 DME users to VME/K and the 2900 untive made when they have reached the limits of DME.

On the contrary, iCL should maintain and continue to develop the 2903/2904 range side by side with the larger 2900 series Indefinitely into the future, as Univnc has decided to do with the Series 80 and 1100, and as Cil-Honeywell Bull intends to by side with the HiS-developed

This means among other things raising the current 256K 24-hit word main memory limit on 2950 and 2960 systems innning under DME 1900. It is a limit in no way imposed by 1900 processor architecture (whose 22-bit uddress mode allows up to 4M words to be addressed in directly and in indexed model but solely by the E3RM if ICL succeeds in winning executive from which Exec 2, Exec 3 and DME-3 have been developed.

It has not been noticed by small Insiness and distributed processing users so far, but will become increasingly a ksome as mala memory becomes cheaper and memory sizes of two or even four Mbytes become more common on rival systems such as the Digital Equipment TRAX.

whether internal iCl. product planning politics will allow this to Imppen, unless it is decided to fulinw IBM's example und split the comminy into two separate rumponents, one for small and one for large systems. The 2003/ 2004 runge and all the ex-Singer compatible System 4, and how products would become the province of a small systems manpany comparable to IBM's Guneral Insiness Group.

On present showing this would be a highly profitable 2900 series systems have been dynamic and expanding comcalling up ICL's R&D resources, pany un world markets needing no government support whalsocontributed multily by the 1900-compatible 2903/2904 range as plough back those profits that it dnue unt distribute to shareholders into its own lines. It is vital for ICi.'s future. The future competitiveness on stability and profitulality that its world markets of the smaller currently well satisfied 2903 and - systems should not be weakened be put through the same un- R&D funds that they have necessory nggravation as the earned, to devolop s large inge 1800 users in the 1970s. general purpose computer series. ICL should not, therefore, try with a much less certain future to drop the 2903/2904 range outside a British government

Hopes for the future

From page 15

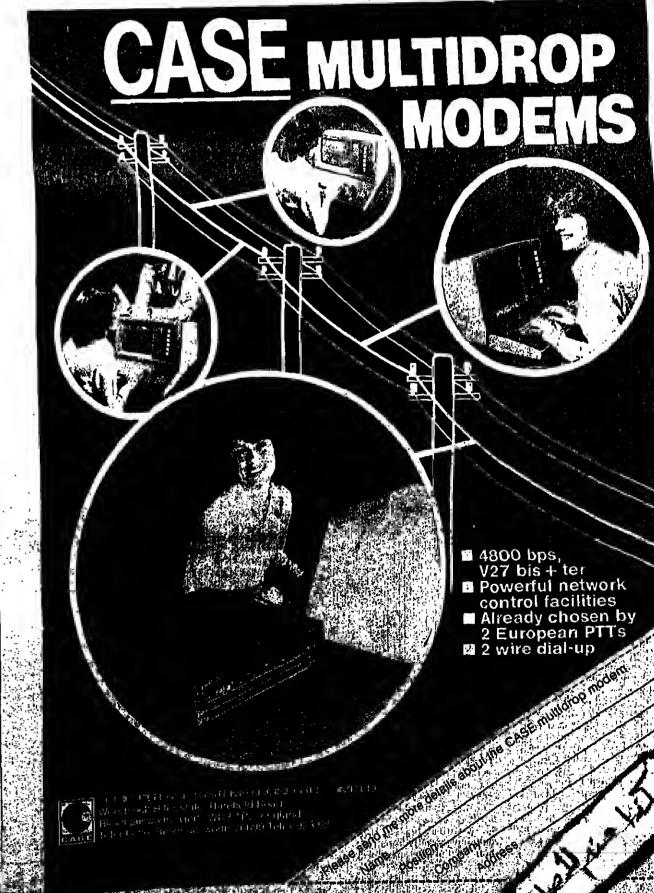
so much these days.
"But our job is to manage our" business in the most affective

dressable File Siore.
Dr Wilson firmly quadres any doubt. We baye to continue to

devalop products like these," ha insists. "No one company can be ahead of the field right across the board, but we have to be ahead of the field in some areas and I think we always have

COMPUTER WEEKLY, October 19, 1978 Systam Ten Systems Praducts Group Oansrei Guelnssa Group 1600 DME 2972 + DAP Larga and very lerge sarist precassing systems in the ATLAS-3032 3031 2660 DME lus estagery 370/146 2650 DME Medium-sized modeis 370/136 2950 DME 125 116 2803/40 3/12 Tan/220 Multi-etation transaction System 34 2903/20 Single-stailon systems System 32 Desktop system 5110 Yea Yas 3/12& 3/18 snguages: Cebel aeY Yes yas Fortren Yes perand Isngth (bits): 32, 64, 126 32, 84, 126 Fixed point binary 16, 32, 64, 126 t6 er 32 _ |-31 1-t0,000 1-3t 1-31 6 Y88 hanumeric charecte Yes Yas slly 'sddræssbi

Table 3: IBM and ICL range cavatteble today in rough order of comparable processing power.



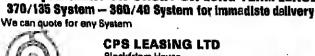
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IN the razzamatazz of world limited Master to a fixed lookchemplonsbip computer chess ahead depth of five ply, could we have been hypnotised into overlooking some very remarkable homa produce. The first energy considerable reserves of chess knowledge, for the play considerable reserves of chess knowledge.

Birmingham of AERE, and Peter -Kent of the Rutherford Leboretory, Master has reached a point of meturity at which It probably has more built-in chass knowledge than any program in tha world.

Why then did it not acoop the world pool at Toronto last aummer? Remember that it suffered a 2:1 disadvantage compared with Moscow's Kalssa because of the communication delays Imposed on remote operation by the tournament rules. As for Chess 4.6 we can throw in another factor of 5 at laaat, corresponding to the hardware advantage of a CDC Cyber 176 over an

Since then Master's education has come on apace, including little things like racognising immediate mates "at o glance instead of flogging tha legal move generator through all pos-sible variations and replies.

Moat convincing of all is Master'a recent coup in playing a human Expert under conditions amounting in effect to lightning chess from the machine's side, yet allowing the human the normal time for making his moves. To have achieved a draw under these conditions, which

seeds of the British program at times during the game the Master were sown by Alex Bell. human was plainly looking further shead than the machine. Nick Jackson la known as a atrong tactician end is graded about BCF 2100. Here la the game, with commentary by US National Master Danny Kopec:

RI ACK Nick Jackson 1. Nf3

Thia is generally scorned as ceding the centre, but it will be Interesting to see how White will recovar tha pawn. Computer programs are notorious for oringing out their Queen too eerly, and perhaps lackson thinks he might get an early initiative by drawing out and attacking the White Queen after 3.Qa4Ch, though this la quite

4. NXC4 b5 White's grip on e5 ia challenged aince 5.N/c-e5, f6 6.Nd3, e5 is

6. g3 This is all in Master's book repertoire.

the KP. The move played admits Ita awkwardneas, and Black Is already better thanks to his

Master keeps expecting ... e6,

but this is an unnecessary weakening of the dark squarea. 12. Be3 Black is even contesting White's

control of d4. Pointless and weak. Bg5 la better.

18. Ne4 White had a horrible pawn structure and position. The move played la OK, but Qb6 la more poignant.

17. ad 18. Qd3

If 18.Nxd4, Nb6 and Whita'a position is very loose. Master expected this move, though it is not best. Better is 16 . . . Qb6, i.e. 19.e3, f5 20.Qb3Ch, Kh8 21.Ng5, Qb7Ch 22.Kg1, Nc5 etc. Also good is 16. ... Nc5! 19.Nxc5, Qd5Ch etc. (Qc7 or Qe7).

18. Qxd4 20. Nxd4

Mil I MI

Figure 1: Position efter 18 . NeBl?

R/1-d8 22, R14 28. N13 Nxb2 25. Rxa8 28. Ng5 27. Nd5

pected by Maater. Now White

27.N/fxh7 alao works. 28. Fth4

h6 is much leas weakening 30. N14 31. Nd5 32. Nf4

The only winning try at thia

37. Nd57 White forces things too soon

38. K13 Rd3Ch 39. Nxc3 40. Ka2 bxc3 Kg7 Kf8 41. Rb8Ch 42. Rh7Ch 43. RbBCh Kg7

Black should rush his King to the support of the passed pawn with 43. ... Ke5 if he wants to make a serious effort to win

Rx13 Now the game is a clear draw.

46. Kx13 47. Rxc2 Naich 48. K14 Nxc2 49. Kxf5 Nd4Ch 51. Kxh5 Nxg3Ch And the game was drawn in a

few moves. We can assess this game by saying that neither side played well enough to win. Black made numerous errors in not exploiting White's poor middle

Since the game ended up with only king, pawn, king and knight on the board it is pertinent to mention Grondmoster

Skamkovick, wko recently visited this country. He has been tormenting his colleagues with the fullowing study:

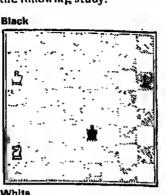


Figure 2: White to move and draw

How on earth Is the knight to get round so as to arrive at the right time and place to stop the enemy pnwn? Shamkovich reports that Bobby Fischer solved it in under twn minutes. but that all others kave agonised for at least hours or days. Indeed one chess-playing friend of his has at the time of writing been hard at it for the past two

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Data General claims that the

REORGANISATION of the Scient entisultancy and bureau group into three subsidiarlea under a

holding company has been announced. Aim of the corganisation is to manage better the rapid growth of

to 50 countries over the past 10

years. They are particularly

This newly-formed grouping

is to be headed by L. D. Board as

chief executive. Board is also

chairman and Julian Vear as

chainman of the group holding

conquany, while Verr is a chart-

ered accountant who less transferred from BP to manage

Scieon's financial affairs. The

new group experts a £12 million

Plose behind comes the Ger-

man company, projecting £1)

million with one fifth coming

trom outside the Federa

Republic, mainly in Austria bast Germany, the Soviet

The burena, running on thi

vac 11tt8s of Milton Keynes

projects a tornover of £3.5 mil-

Bon this year and is prowing at an autual rate of 25%.

On the possible merger of

acquisition of Selcon, Bourd says that any opportunities or offers will be considered

carefully, udding that charge will continue to be a major part

participante will include Profes

snr Alan Weston, Chnriss Read

and Paul Slaghart from the DPC,

Kerstin Aner, Swadish Educo-

tion Under-secratary, and pos-sibly Christopher Layton from

The planned programme is in four sections. On the first mor-

on the first aftarnoon, four

simulteneous workshops on

cost, employment records, and

the like; on the second morning,

news of what is being done in other countries; and on the

the Europeen Commission.

Protection

urnover this year.

Union and Poland.

cludes three connecrcial models,

bottom end of the Data General Eclipse minlemagniter line has been added by the company in the US. Called the Eclipse 1 150. it is based on the same processor as the S/13il small scientific machine, but excludes the specialised arithmetic features, replacing them with enhance. ments for efficient running of

Priced of hetween \$75 and and \$150,000 in the US, the 17/150 is designed for both stoud-alone unincomputer market in that it working and as an element in a

At the other end of the range. Data General has doubled the main memory enqueity of the powerful Eclipse M/600 to one Megaword. The M/Gbn, ansounced at the beginning of the largest Prime machines cannot

The three companies are the

Scien Computer Services Ltd

bureau, the German comsult-

ancy SCS Scientific Control

Systems GmbH, and Scient

Consultancy International Ltd.

It is in the lost-named that the

main reorganisation has taken

ther nine subsidiaries which

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metrix is a now dovolument to tlaw true descenters on lower

ase cheractors, unit pives pont

enaugh delinition for some ward processing applications.

Liberties, the Institute of Dala

Processing Munugement, and

the National Computing Centre.

Keynote spenker will be the

Homa Secretary, Merlyn Rees who will present the govern-

ment's plans for privacy lows

Protection Committee's report.

basically to discuss the DPC

report, end has had to be post-

poned several times owing to

delays in completing the report.

This is now ready and is due to

be published in the next few

Venue for the meeting will be answers.

linked to Univac 1100

A LINK developed by Triod Computing Systems of London enables Constructors John Brown to transfer details of telephone calls recorded on its 18M 3780 exchange to a Univacting computer for detailed and lysis. Calls related to en and access tentrols and gineering projects all over the office in Faddits to the latest to the l

IBM 3750 exchange

Merlyn Rees to address

A CONFERENCE on computers and privacy is to be field next January, juintly organised by the National Council for Civil alternice and content of the Rembrondt Hotel, Knights-levilge, on January 24 and 25.

Liberol leoder David Steel will open the proceedings, and other

conference on privacy

he noise down to BODin.

reach £26 ndilloo, conspared with £12 million is 1976.

the C/150, C/330 and C/350, three scientific nordels, the S/ 130, S/230 and S/250, the arroy processor AP/130, and the multi-purpose large-scale timestacing M/Ritt.

> A1/600 is unrivalled in the large can handle up to 64 simultamends users, suggesting that among the competition, the HP-3000 from Hewlett-Packard cannot run so many johs simul-Janeously and the DEC PDP-11/ 70 and VAX-11/780 and the

The AP/130 consists of an S/ 130 processor with on arroy proccssor back-end, both processors having direct memory access. It also incorporates additional microcode instructions and hordware for more efficient processing of arroys than is pos-

shie using Fortran. The company niso has a "CS" systems for the DEM busi-

There are two principal opcreting systems on the Eclipse line: the Novn RDDS and the new AOS timesharing, batch and real-time operating system. Languages available under ADS Include Cobol, PL/1, Fortran IV und V, Basic, the IDEA transac-

Scicon consultancy regrouping dustry, and the large number of small companies that could Full hardware and software not justify the capital inveat- support will be available ment involved in buying such through Livingstone. the company, wholly owned by British Petroleum. Group turnover for the current year is projected to

Development systems

offered on rental basis DEVELDPMENT systems equipment, Livingstone is infrom Intel and Motorola are vesting about £100,000 to pronow being made available on a vide the equipment on a rental

rental basis from Livingatone basis. Hire, a company that has specialized in renting elec-will be available: the intel ronic instruments to industry. MDS221, and the Motorola This is the company's first sally into the microcomputer busi
The systems will be available

at between £800 and £1,600 a Aiming at the large potential month, depending on configuration, and in-circuit emuladevelopment systems in in- tors will be available for an extra £300 a month.

birthday surprise

an unusual tenth birthday sur-prise when the racing car it sponaors gained its first Formula

Driver of the ICL car, New in the British Championship BP race at Mallory Park, on October boosting his overall position in this aeries of races to fifth, with one to go et Thruston on October 29. Wilson has alreedy finished fourth in the Formula 3 Vauxhall series, which runs in parallel to the BP races.

Wilson told Computer Weakly he was "ovar the moon" at winning and that he was particu-larly pleasad to hove brought success to his ICL backara.

£4½m modem order

FURTHER orders for 12B modems worth £4½ million bring the total ordered from SE Laba by the Post Offica to nearly £10 million. Developed for Datel 2412, the 12B is also sultable for the International Datel 2400

What's your line? Please tick in the appropriate box ich TIME SHARING BUREAUX who do not wish to take financial and echnical responsibility for terminals acquired by clients. COMMERCIAL BUREAUX moving into the remote job entry and elecommunications market. MANUFACTURERS OF TERMINALS and their agents, who wish LARGE COMPANIES with a potential telecommunications network which whild involve high capital expenditure on multiple terminals. ORGANISATIONS such as educational establishments who commonly have revenue budgets rather than capital budgets. MINI COMPUTER USERS who wish to limit their capital expenditure. USERS OF WORD PROCESSING SYSTEMS who may not wish n make a capital commitment in a systems area that is rapidly changing.

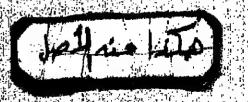
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For more information contact Mike Brooke, Telephone BYFLEET 49511 & 49618





stalled a teleprocessing healin fact turned out to be

monitor in order to "put more economic then e the clock back." He views betch system, and epart

his use of informatics from providing information

Minicomm peckage, now directly to the user as end

Wastinghouse's Westi, es when required, the

a mesns of reatoning to the screene heve even offered

user departments, the ease price reductions. In e

of eccase to and respon- eingle month the sevings sibility for the company's on the one-part end two-

information which they pert atetlonery, previously

had before any computers required, pay the rental on

were installed. Rosemary a number of screons.

Pyne, who met and talked Rosemary Pyne adds that to Edwards, describes here AIS' epplication is not par-

the reasons which led to ticulerly unusual, but per-

the decision for installing haps the methods used to

the package and also the solve tha problem ere.

The VDU-based system

Devid Edwerds, DPM at benefits which

Allied Industrial Ser. accruad since than.

vices, maintains ha has in-

COMPUTER WEEKLY, October 19, 1978 How to create more jobs without inflation

By Geoffrey Beacon

ment without inflation ia motivated by the belief that Increased lelsure cannot be the compicte solution to the unemployment problem which is being brought about by the combination of the limits to growth and improvementa in abour productivity.

There ere two main reasons for thia belief. The first is that we still live in a work-oriented society. For the majorly, achievement derives substantlally from employment. The second reason is that leisure should not be forced on people. either by unemployment or short-lime working, who could enjoy shorter periods of leisure a increase in employment for the great deal more with the extra less well paid without n fall in income that comes through

employment. In the UK approximately 90% of the cost in producing the gross domeatic product is accounted for by wages and salariea, including income from self-employment, which in turn creates 90% of the national in-

As a first epproximation, but quite e good one, we can ignore other forms of income such as rents, profits ond transfer payments, and divide the working population of approximately 25 Illion into five groups of 5 millions each with eernings of £40, £60, £80, £100 and £120 per week. (In fact the middle I hree-fift hs of the working populetion earn

Although auch large differences in income are deplorable, it is an unfortunote fact that unemployment exists mostly among the lower poid. This indicates that the wages of the group es a whole are higher than that necessary for full

slightly less and the top fifth

A rough estimate of current unemployment for each group is

t0% VAT.

0.40

0.t 5

Plus 10% VAT

parcentages in the last column have 1.5% subtracted to account for that level of unamployment that is thought to be the irre-duceable minimum.

Sometimes right-wing economists will say that unem ployment la caused by monopolistic factors in the labour market. They are clearly referring to thoae factors which keap the wages of the less well paid ebove the values necessary for full employment. Two axamplea of these monopolistic factors are unamployment benefit and the bargaining power of trade

One advantage of labour subsidles is that there can be an their income. In our simplificaba true, these labour subsidies muat be paid for by taxea which fall largely on the more affluent.

For the purposes of the calcuistion in this article tha tax considered for raising the revenue will be VAT and the total labour subsidy paid will be sat equal to the revenue relacd.

VAT raises tax on gooda and services proportional to their lotal cost. This in turn can be considered a tax on the factors used in producing the goods or

As an example for our simplified economy, Table 2 shows the first effect of raising an axire VAT just ovar 10% on all goods ond services end using the money raised to aubsidise labour on oper worker per week baals.

It can be seen from Table 2 that a policy of labour subsidies pald from expenditure tax applied to our simplified economy would decrease labour costs for the bottom end of the labour market and increase them ot the top end.

This would have the effect of increasing the demand for labour and thus increasing

n cost fishout -10.00

~3.30 0.00

+2.00

21 10

Table 4. The estimeted effects of a blanket labeur subsidy poid from VAT which creates 10% mara jaba among the £40 per wack group using a labour anly madel of the economy.

Elasticity of damand = 0.2 (Vet = 84.4%, labour subsidy = £44.8 per

Wags group £	Extra joba %	Wags change £	% Standard of living change
40 80	10 +4.7	.0	+2
80	+1.8	0	+2
100 120	0	-0.02	+2
120	0	-1.18	+1

Electicity of demand = 0.8 (Vat = 18.7, labour subsidy = £16.5 par waek, production rises 1.6% in real terms).

I	Wags group £	Extra jaba %		% Standard af
	40 60 80 100 120	+10 +2.3 0 0	0 0 -6.88 -18.58 -32.47	+18 +18 + 8 - 5 -14

tion of the economy, for this to. Electicity of demand = 1.0 (Vet = 7.4 %, labbur subsidy = £7.4 per week.

Waga graup	Extra jaba	Waga ahanga	% Standard of
£		£	living change
40 60	+10 +3.8	0	+4
80	+0.8	0	+4
100	0	-3.14	
120	0	-7.08	<u>_</u>

employment for the lower paid. For the better paid, the percentage increase in costs is much less than the decrease for the lower paid so the decrease in emand is likely to be small in

In any case this decrease in demond is more likely to manifest itself aa a downword pressure on the wages of better paid rather than unemployment, because for them the "monopolistlc effect" of unemployment benefit is less. That is: they lose much more than the less well paid by being unemployed.

The extent to which a change in the coat of labour changes the demand for labour is described by the elaaticity of demand for labour. At this stege of the argumant Ita value is not a crucial factor because if the elasticity is low the desired level of employment can be created by choosing approprietely high levels of VAT and labour aub-

VAT on the present model to produce 10% extra demand for the lower pald on the assump-tion of diffarent values for the elasticity of demand for labour.

Table 2. Weekly changes in labaur costs due to lebour subsidies paid by Depressing the level of wagas of the better paid depressa the money value of national output ao the rate of VAT must be somewhet higher than ahown in Table 3 to pay for labour aubsidies. Since, however, national output is not decreased the thosa with the same money we have no better off. Tebie 3. Retas of VAT necessary to raise a labour subsidy to areats 10% more employment for the £40 per week group. wage are better off.

Extra joba do, of course, save public money, both In the form of reducing the expanditure on unemployment banefits and increasing tax receipts. Work by economiats auch as Santosh Mukhurjee has shown that such savings are of the order of 90% of

an Individual's working wage. A contributory factor to This seemingly high figure is that most of the unemployed are not

ere ao large Ihat, if the elasticity of demand for labour were greater than about 1.1, labour subsidy achemes become self financing - the subaldy puld being leas than the savings in expenditure caused by a worker

assumption tbnt the elasticities of demand are the same for each group, that increased labour costs for the higher pald merely depress their wages and that decreeaed labour costs for the lower pald increasea employment among them with aubsequent savings in public expenditure, these savings being used to finance the labour subsidies.

high wage eorners. The sums involved, however,

ecoming employed.

Table 4 is calculated on the Since the elasticity of demend

reached, an estimate of the mar- natural resources. ket's valuation of the extra labur employed can be obtained.

The value of this extra labour pay for labour subsidies would be to tax these other factor inour employed can be obtained. is the value of extra production comes (by taxing the end pro-and is shown in Table 4.

The change in standard of lahour components). living shown for each group is Table a has been calculated on due to a combination of this the assumption that income extra production and the de- from capital is £200m per week flationery effect of reducing the and the even more arbitrary wages of the better paid. assumption that the elasticity of

The factors of production demand for capital is the same as other than labour form only the elasticity of demand for lababout 10% of the national in- our. come, after allowing for capital Crude through this calculation heading of capitul,

capital includes such things as interesting enough to warrant rent on land and buildings, net further discussion.

depreciation. These factors can has been, it has shown at least broadly he put under the the possibility of increasing employment without causing The income that derives from inflation - a possibility surely

The effect of raising VAT to

Table 6. The estimated effects at a blankat labour subsidy paid from VAT which creates 10% mare jabs emong the £40 n week group using smodel of the economy with elasticities of capitel mul inboor use set to the same

Elasticity of demend = 0.2 (VAT rnie = × 46.2 %, lohour embeldy = £38.5 per week). Change in capital incomo = -8%. Production rises 1.7% in

RECENTLY aeveral letters and articlas in Com-

puter Weekly have suggested a means of tack-

ling tha question of the effects of microelac-

tronics on employment. That is: to introduce some financial mechanism to reduce tha cost of

labour as a factor of production. And by

reducing its costs increase damand and creata

more jobs. This aspect of the dabate has, how-

ever, been one-sided saya Geoffrey Baacon, a

There has been no disputing the claim that

In the absence of any reaction it is parhapa

worthwhile showing, with what Beacon says is

en admittedly crude example, how one such

mechanism, labour subsidies paid by axpanditure taxes, might be used to reduca current

levels of unemployment without causing infla-

for labour gives an estimate of profits from using plant and

the labour cost at which the muchinery and net income from

desired level of employment is the sale of minerals and other

such mechanisma could be effectiva, although

there has been some diacussion as to tha

research fellow at Leeda Polytechnic.

relativa merits of such mechanisms.

Wege group £	Extro je be	Wayo chonga	% Sinnitard at tiving change
40 60 80 100 120	+10 +3.8 +0.7 0	0 0 0 - 0.76 -16.03	+8 +0 +a +n.5

Electicity of demend = 0.8 (VAT rate = 15.7%, inhour subsidy = £15.0 per weak]. Change in sopital income = -0%. Prothyketing rises 1.7% in

Woge graup	Extro jaba	Woga	% Standard of living change
40 60 80 100 120	+10 +5.4 +3.0 +1.8 +0.4	0 0 0 0	+3 +3 +3 +3 +3 +3

Electicity of damend = 1.0 (VAT rate = 4%, labour subsidy = £8.34 per weak). Chenge in copital incama = -5%. Praduction rises 2.7% in residents

Wegs graup	Extra jabs	Waga change	% Standard of Ilving change
40 80	+10	0	+3
80 100 · 120	+1.5	0 -0.70	+3 +2
120		-3.85	-0.1

For later consideration, however, Table 3 gives the rates of the unions From front pege an axisting microweve radio

Vest Midiands Gas is Cyril link. Howarth, a well-known figura n the word proceasing acene. He wants to link the Wordplex 7 to an ICL mainframe and than to a COM recorder, thereby replacing carbon copias of lettars entiraly by microfilm. (Mainframes the gas board haa at present are all ICL, a 2976, a

1904A; and a 1904S). He also wanta to be eble to produced automatically on the From front page phototypeaetter. The ruling of

phototypeaetter. The ruling of both vertical and liorizontal lines is seen as one of the major difficulties here.

Further in the future is a plan for electronic mail by communidating with word processary and communicating with word processary.

Sald in the last Credit and Communicating with word processary and communicating with word processary.

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Sald in the last Credit and Communication with which will be sald in the last Credit and Communication with which will be sald in the last Credit and Communication with which will be sald in the last Credit and Communication with which will be sald in the last Credit defined manual accounting sys-

Manning lavels, job satisfac-Technical difficulties abound In these plans, end it remains to be seen whather it will be Howarth or those who acoff at the main preoccupar tions of the unions. Whether him who has the last laugh.
Union problems are more immediate, however, as they are in aeverol organizations. in aeverol organisations con-templating WP. Other unions termines the number of typists

axpressing concern ara Apax needed. System failure hits company auditing procedures they con

Why one DPM is happy to 'put the clock back' By Rosemary Pyne

WHEN the DP manager of a company maintains by bas in salled a belegrearysing monther in order to "part the clock has k" ir's quite a thought. But far David Edwards, DPM

al Allled Industrial Services, this Is exactly the way he views his use of Informatics' Minicomin package, now Westinghouse's Westi. Recause at AlS putting back the clock means restoring to the user departments the ease of access to and responsibility for the company's nformation which they had before any computers were instal-

A VDU-based TP system has in fact turned out to be more sconomic than a batch system. Apart from providing adornotion directly to the user as and when required. The screens have even offered price reductions, Before the screens were installed. AIS used to must the major files daily after applisting, but now that they have gained confidence in the new system there is no necessity for the

massive print.
In a single month the saving on the one-part and two part stationery previously required pays the rental on a pumber of

Als' application is not particularly unusuad, but perhaps the methods used to solve the pro-

AlS is one of the largest 11K industrial laundry and dust control rental organisations. Since its establishment in 1864, the company has had its roots in Bradford, Yorkshire. And it's here at Lidget Green, Bradbord, that AIS runs a 256K 11tM 360740 complete with nine 2314 disc drives, card reader and line printer and 13 TT 3280 VDUs. But hi March, 1976, when the

Page 1

Edwards now sees that to go

application could have been very awkward. "We saw we would all have to leam; the DP department as well as the users. So we decided to try a simple inquiry facility. It's lucky we weren't led astray by salesmen. What we set out to produce was a user system and not a DP extravaganza with lip-service being paid to the user side." The inquiry application itself

customer reintions, general ad-

ministration and cash offices.

numitor on the market. The original intention was to is larger than it appears. Screens run a data entry system, putting are placed in the credit control,

a modest 360/30 with only 04K

memory. Current batch work,

together with spooling, mount

the ideal TP monitor would have

to use only 20K of meninry, in-

cluding applications programs.

As Edwards says, this meant AIS

was obliged to buy Minicomm,

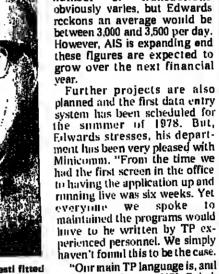
which was the only suitable size



DAVIO EOWARDS - Westi fitted in wall with aur pailcy of easy-ta-

prime thata on file through the original five IBM 3270 VDUs. This was an attractive idea because It meant existing data preparation equipment, IBM card punch units, would be obvioled and a function would he reduced.

straight to a data preparation



"Our main TP language is, and ilways has been, ANSI Cobol. We have nn hesitation it utilising programmers trained in

Cobol for writing our TP applications. In fact, many programmers have found TP programs eusier to write than batch." Unfortunately, the rising number of transactions Is

chusing the software to, as Edwards puta lt, "creak", "Primurlly, thia is because



Minicomm is single thread. Even don't care where I'm phoning." so our users may have noticed no degradation yet, but we have. One point has now become obvious: because Minlcomm exploits single-thread to the full, il's easy to use. But with multithreading, we have to accept a more complex product and application programs. We intially set out to find something better than Minlcomm but with more than one task currently active, and, to be fair, we

couldn't find it number of screens, currently 13 end due to rise to 16, the possibilities of operators hitting any one of the SEND keys coocurrently are becoming greeter and the reaponse tima is bacoming adversely affected. Statistically the more screens, the . wanted the user to be able to position bacomes. switch between programs with ed us, because with little or no fuss. Signing on end TP monitors we off struck AIS as time wasting the suppliers seid we and essentially wrong, except worae the poaltion bacomes. Weatl swayed us, because with examined the suppliera acid we would have to have ataff on-alte for ao many days to help us use it. They all told ua how we should design our systam. whereas what we really wanted to know was how their TP

matting ones.

design:
"With Westi we simply used the manuals and had a free trial period. We didn't want the implied interference the other suppliers offered. We pride our selves on being essentially a sar-vice company, so we need to be able to react quickly and stand on our own two feet without having to rely on any TP our pany. I can't understand the great need for support. In my pany, I can't understand the great need for support. In my view if you need support, you don't want the padkage. On the other hand if we do need the odd bit of help, providing the support can be had over the telephone, I

still, it will offer more potential Edwards feels the cost inand greater flexibility, with extra capacity available. volved in perhaps phoning Edwards feels their ex-America for support are minimal periences could be valuable to in companison to supplying his

other users. The TP program users with a service and to the prospects of a dreadful software ming philosophy at AlS has always been one of easy-tocatastrophe. In any case, Westi understand Cobol programs. now has technical support in the simple in structure and simple to UK as well as America. write, understand, test and use. Edwards claims that Westi Westi fitted into this congives him application design cept particularly well, according freedom. Pertially, this is beto Edwards. "When we first because AIS already had a TP syscame interested in Westi we tem running under Minicomm and the DP department felt any change to a new monitor should lined up an experienced member of staff to chat with the Westi be completely Iransparent to The technical man. Unfortunately. usera; they shouldn't even she was ill and a more junior person had to take over. know, Edwarda found that with most TP monitora he was

"As a result, at 20 and with only 15 months DP experience obliged to design aystems where behind him, he was made resuaers had to algn on and off, AIS ponsible for the conversion project from Minlcomm to Westl.' AIS is also proud of its dota-

base system, which they dewhere security demanded it. Total. The result of their system With Westi, AIS could see a way la thet they are eble to acceas any plece of data by Ita disc addreas, with no tortunus algorithms involved. The datapast the difficulty. Changes to the systam were only minor for-AIS uses its own access base is assentially a file of data at different logical levels. There is a method and its own database system none of which inter-ested most TP monitor suppliers. But to AIS it made sense to prime key of seven bytes for each customer account number and this is followed by data uf and this is tollowed by data up different. levels/types iden-tified by a four byte binary field. To allow for any expansions, there is space for every possible binary kay from 0000 through to 9809. Deta is therefore evoluble. ratain, their wall tried accass method and daia organisation. so thet programmars could con-centrate on the TP application centrate on the TP application areas

The original Minicomm systam had gone live "embarina singly wall" with no system or programming errors right from start. West will help AIS live up by its keyed address. While, as Edwards admits, the

file may be over-engineered at presant, there is room for exstart. West will help Als tweeth to the initial success with more complex applications programs.

If is also expected to give better manta. New dota is simply esponse than the old creaking assigned a new level and an Minicomm, systam; better associated four byte binary key.

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espects of the Benk's operations and otter a carear challenge for any one interested in

lerge systems. To meet our long term plens we need to expand our development

leem by the eddition of e small number of eteti who can provide experience and

The mein equipment comprises a 158AP and 3031 supporting MVS, VTAM, TCAM

end TSO with a country-wide TP network of over 400 terminels. A second network supports 140 VDUs, printers and SWIFT. New terminels have been ordered to roplace

the first network. A 3B50 and COM heve reconly been instelled, PL/1 and BAL are the

If you ere eged 27 to 32 with a good degree or equivelent protessional qualification. et least 6 years' project experience end would like to join us in ottices adjacent to

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en application tormor write to B. H. Beillie, Head of Computer Development, Williams

& Glyn's Benk Ltd., New London Bridge House, 25 London Bridge Street, London

BANKING AND INSURANCE

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THE banking and insurence industries are dominated by a number of very big companies that prefer to ecquire their computer staff by recruiting school-leavers and graduates and putting them through well organised in-

ob mean that their staff

programming and opera-traina tions people in banking and

through well organised in- moved up to Sheffield from next year.

London, according to the Gloucester area. turnover is low compared with other sectors of commarce and industry.

But these undowned with other sectors of provincial life, large and industry.

But these undowned with the sectors of provincial life, large and the Midland by life below a black to online But there undoubtadly like being able to drive to concentrating most of ita processing.

The Midland likes the Paul's Cathedral,

Grocechurch Street In the for the rest of its workforce, sized machinea to two big City, The operation will be while at Barclaya, DP staff ones — dual 370/158s. many experienced staff Employees towards percentage rise has knowled at an impressive not only have their own. The Prudential adds that from outside because it remuneration in the integrated for that cycle.

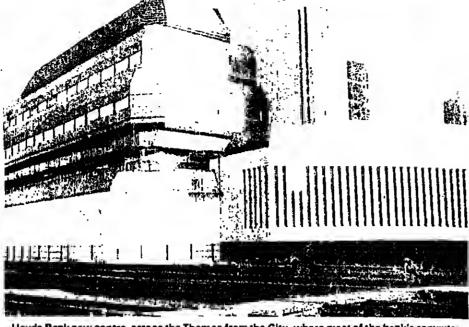
Barclays is another major value of programmers and bank that prefers provincial analysts has perauaded life. Most of its systems and Lloyds to pay them what is programming staff have called a "technical allo-" DP staff to make sure, leavers and university of the life in the life in

operators, en Indicotion ternal training schemes London and the Midlend Some of operations steff possibly of the relative derather than hiring ex- says that the vest majority from the two London cen- cline in demend for operaperienced DP professionals. of them were prepared to tres are not keen about tors among banks and big In addition, the security make the move because of making the move and a computer users in general the financial incentives number have left the bank now that DP workloada ere · already for that reason, so tending to be concentrated Most of them would not Barclays is now recruiting on one or two very big sysperks that often go with the consider moving back to treinee operators in the tema instead of several medium sized configura-

ere openings for the right work instead of commuting computer power in central one of the country's best sort of experienced systems, up to the City on crowded London at Bankalde, just known insurance comover the Thames from St panles, Prudential, for hank actively seeking ex. Midland Bank international salary scales for its DP staff line-up of mainframea has ably lower than 10% in 1978. branches. up to nearby Barnsley from that are related to the scales changed from six medium. At the some time the The attitude of the Nation months before they can

between £3,500 and £4,500 a new centre thet should be separate salary scoles but year to work as operators at completed by 1980 and will programmers and analysts its computer output employ about 300 staff, have a scale different from nilcrofilm bureau in Lonnary of them recruited don, provided they have at locally.

However, the market between £3,500 and £4,500 a new centre that should be separate salary scoles but the fail-off in its require-indicated that they tend to want dustry is one of extreme discontent with the way operators is now so something like £1,000 more discontent with the way operators that they are being pull in that the government's pay graining staff are resoluted in ust puts a substantial that any new operators that still need to be recruited in ust puts a substantial programmer. The Production of extreme discontent with the way operators that still need to be recruited in ust puts a substantial that uny new operators that still need to be recruited in ust puts a substantial that they are being pull in that the government's pay graining staff are resoluted in ust puts and the fail-off in its require-indicated that they tend to want dustry is one of extreme dustry is one of extreme



according to the company, groduates, as does Royal that their selerles are in the Insuronce, whose DP staff cular problem at the moupper quartile of the cur- ere nearly all located in ment because they award The Prudential points out operates nn IBM 3033 there in July each year - the example, says that it has that it does not lose more which forms the centre of a back end of the existing insuranca, especially if thay Sheffield area so much that Another difference bet - already had to move about a than 10% of its DP stoff in terminal network providing government pay cycle It is now moving the head ween Lloyds and Bercleys is dozen of its operators over eny one year ond that the online claims processing which runs from August to office and DP centre of that the former maintains to programming because its percentage was consider- facilities for its 260 August - so their

> company does not take on nal Union of Bank calch up with whatever many experienced staff Employees towards percentage (ise has been

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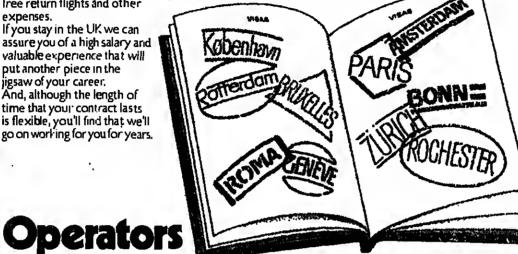
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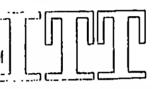
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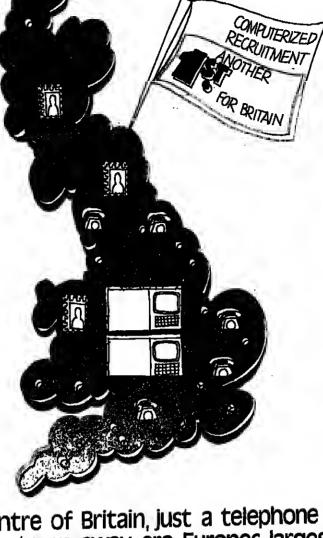
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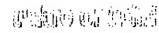
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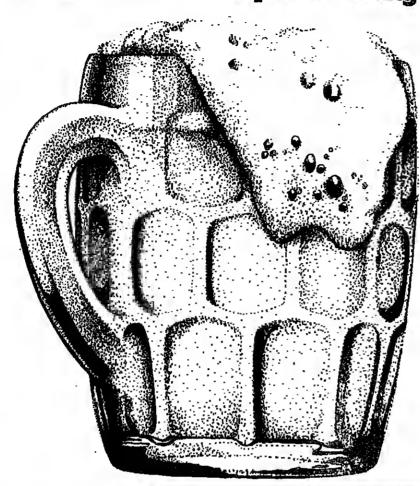
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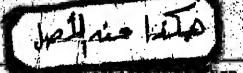
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al Huw would you obtain the address of a partition's own communication ragion?

bi in what order is the Label Information Cylinder searched by the standard DOS or OOS/VS open routines?

c) An antry le deleted from the channel quoue et the time the supervisor executse a SIO for the relevant CC9. True or Felse? (pleass give reasons)

d) CSECT1 1,12 2,3 LABEL2 USING LA XL OE EX OALR OCT EOJ CLI LA9EL1 3,0 2,LA9EL1 LA 9EL3 + 1,4

I) What does general register 2 contain at EOJ?

ivi What other instructions have been modified during

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a byte. The aub-routine is to be called using standard IOM calling conventions. The address list passed by the calling terget byte. The sub-routine is to be written using ISM Assembler Language and should be capable of executing under OOS on an IBM 390 or DOS/VS on an IBM 37D. The alze of the aub-routine must not exceed 109 bytes. The code must allow for any value to be contained in the byte whose

ej What would be the effect of attempting to execute the

a) The first instruction of a problem program running under DOS on an I9M 390 CPU with the direct control

b) The first instruction of a logical tronsient loaded into

c) The first instruction on a problem program running under DOS/VS on an ISM 370 CPU with the direct

d) The first instruction of a logical transient loaded into

the logical transient eres by a problem program running under DOS/VS on an ISM 37D CPU with the direct control feature installed.

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Cideing data 6th November, 1978.

disciplines

The dealgn of the date

entry system was remark-

a aingie door about ten feet

ecrose through which psr

Imagination.

than a little jostling.

ticipants had both to enter

tempers, mild hyaterla,

crude deriaion and more

simple, perhapsi Meanwhile, back at the

ICL computer centre, close

presented and organised

pared itself to provide

prompt and meaningful information. I don't know

whether they actually

received all the input they required, but if they did, was certainly not in the

form they had originally

ing under a handicap right

I have seen this kind of

situation so many times be-

degraded simply because

the user does not appreclate

the naed for discipline

metched by efficient sys-

tems that are simple in con-

ception and practical in

application, based on

methods which have been

thought through and tried

To compute inefficiency

Salasmen and ayatems

anaivats ailke muat con-

stantly be aware of their

responsibility to ansure that

the user truly understands

effective application of a computer-based solution;

There must be a complete

understanding of the disol-

plines involved and the need

It is one thing for a user to

for order and consistency.

view the computer solution

as a "black-box", but this

attitude must not be

the rate he has to play in the

out on a dry-run basis.

from the start).

Why not enter st one end and exit at the other? Too

SO there I was, having experienced the dublous pleasures of a 5.30 am breakfest and the comple-Importance of efficient data tion of a 160-mile journey before 9.00 am, strolling entry systems. Slowly but surely, and through Hyde Park in the hope of finding the entrants' almost too late to get to the tent for the Sunday Times start, we edged towards the door of the entry control.

Despite the encouragement of a beautiful early mention, that runners could autumn morning I found it collect their numbers any hard to be exhilarated by time within two hours of the the sight of what must have stort of their particular been the entire population event, and therefore the of ICL jogging around in queue could involve as company tee-shirts, to say many as 5,000 people at a little of Detaskil and given time. numerous other computer

industry types. entry system was remark-well, I mean, reelly — able. The input device was a thera I was spending my "garden-fete" merquee with waekend trying to escape from the computer busi-

Having recovered from and exit - over 11,000 in all. the initial shock I soon 1 leave the rest to your received another. There stretched before me was an enormous and apparantly static queue of jolly gentle-men waiting to collect their numbers for on event which was soon to start on the opposite side of the park.
The conversation drew to

Its inevitable conclusion. 'Of course It's e bloody shambles, they're using

I guess I have been drawn into that particular verbal vortex too many

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Approach, by Krish Bhasker. 345pp. £20.00. Associated Business

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computers. The author clearly has a sound knowledge of the subject area but many readers will find the Few concessions have been data validity, systems con-made to the practical busi-trol and management res-

made to the practical business reader, especially where the author has indulged in academic areas.

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useful for examination fold. Put, one coin aside, and der ut have life useful. Put, one coin aside, and der ut have life useful. Put, one coin aside, and der ut have life useful. Put, one coin aside, and letter the others A Lb Z practical business setting. Intensiveign (1) A-to-1 in the However, the book offers a lefthand pan against I to-R lot of sound practical advice in the right. (2) AB-sulf would be a useful. CIKLSTU against DE reference text for accounts. EMNOV.WX. and (8) AD ants and systems analyses. GIMPSMY against SEPI concerned with systems des KNOTWZ.

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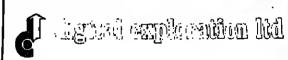
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Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 18 (Unblocked)

After the pullont Pilblairn has fallen to his death, Hex and Cleowoste precious time in a libizing row. Meanwhile, in the crater and rkewhere, things are holling up.

BY now the air was thick with sulphurous fumes. The geyser had died down, but in its place had came earth tremors recurring every few minutes. Even if Hex had possessed a rope it was clear that he enald never have climbed down into the crater to get linck the black box and hoped to return alive. It was high time to depart. Their next abjective was Sprucket's Hole where they

Intended to take the decadent androids' eyllogistic acid and use it to sprend chans over the Network. For safety, they split into two groups and that meant, the way feelings were running. Hex and Ascil in one and Cleo, Lembda and Zap in

They set off down the hill, Hex and Ascii taking a more

easterly route. Soon their two pathe diverged.

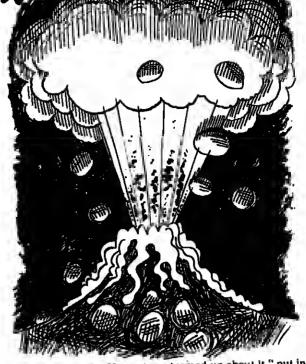
As they walked, Cleo pondered. After about an hour's travelling she asked Znp: "What was so special about that hlack box? Was it really going to revolutionise the world?"

"Well, I think Hex was over-selling it a bit; but it did have some remarkable features, especially in the area of concurrent processing."

"Concurrent processing?"
"Yes. I mean we've all heard of shered file access," he replied (Cleo hadn't but she didn't contredict him) "and we know all about cn-routines, time shoring, multi-threading and so on, but the M5 took it a stage further. When we were tied up to that thing we weren't just exchanging informa-tion, we were sharing experiences. I don't mean DMA cither," he added.

"I'm so glad you don't meen DMA," said Cleo. DMA meunt nothing to her. "DMA stands for direct memory access," explained Lumbda. "Zep's point is that it was more than eimply a

memory-to-memory transfer." "It certainly wes," he went on. "Our consciousnesses uctually interpenetrated. An idea that started in one mind would be developed by enother. It's not the kind of experience you forget in a hurry. That's why we freeked



"And that's why Hex got so steamed up about it," put is

"Yeah," mused Zap, "I remember when Igor Gigotski came to lecture to us. He said that Calculo Ergo Sum (I thunk, therefore I am) was the ultimate ego-trip; end he was right. The irrefuteble existence of other minde ae raw sense-data — it's a bit hard to take. A thing like that could blow the System wide open. It wouldn't fit the conceptual framework. The whole edifice would crumble of its own necord. All you'd need to do would be to hook n few of those machines on the Network and leave the automata to draw their own conclusions."

"You mean the System Is too rigidly centralized to withstand distributed intelligence?" aeked Cleo, with her tongue preesing only lightly ogainst her cheek. The jargon

was catching.

"Something like that," he responded. "The MS was
heterarchically organized around a matrix of holonic
processors with blacelative memories. According to all
that I've read, holonic processors are theoratically imposelble, and the same goes for bisoclative memory; yet we've just had a demonstration, I suspect the System has huched

it up because it endangers orderly functioning."

"A holonic processor," Lambda added for Cleo's benefit,
"is one which promotes the intersection of two or more trains of thought. Bisoclative memory ollows stored data to interact according to non-deterministic rules. Basically they are two facets of the same thing; you couldn't have one without the other. The great thing about the M5 was

that it solved the co-ordination problem."

"The plty of it ie," a rueful Zop corried on, "that we could easily have whipped out the main chip and slipped it into one of our pockets. The reet was just what we configured around it: we could have done that again later."

"But we were too Intent on self-preservation," said

"So all we've got left now," said Zap, "Is my little binary

chopper."
"What's that," inquired Cleo.
"It'e like Occam's razor, only sharper. It divides and

Their conversation was ended by the shock of an earthquake. The volcano had finally erupted. Behind them the night sky was lit up by garish orange flames. It seemed that the whole horizon was on fire. A cloud of dense black smoke billowed over the landecape, blotting out the stars. When they discerned tonguee of red-hot molten lava spilling out over the edge of the cone, they knew it was time to get moving again, fact.

to get moving again, fact. to get moving again, raet.

They pressed ahead at Cleo's best pace and by daybreak had come to Sprocket's Hole, which they approached with extreme stealth since they knew nothing of the androids'

downfall.

The still where Sprocket and Bootstrap refined eyilogietic acid according to their secret recipe was in the emailer hut, along with vats in which it was stored. They were not too concerned about overpowering the androide and geiting at the stuff, but were worried whether there would be enough. If there was only a small quantity, they would have to force the makers to divulge the method of making it and, even if they succeeded, that could involve a lengthy fermentetion period.

when Hex and Ascil had not turned up by noon, the appointed hour, they decided to take the place by storm. Zep marched to the door, kicked it open, and charged in

A scene of devastetion greeted them. Sprocket's body lay on the floor, his flesh already pungently decaying and his metal parts starting to rust. Further inside Bootstrap was alice but fracer in a decay of the starting to rust. alive but frozen in a etate of suspended enimation.

Having oppreised the eliuation and found that stocks of syllogistic acid, which had evoporoted, were low, they dragged Sprocket outsida for the vilituree.
"There's only one thing for it," etated Zep, "we'll have to
reviva the other android so he can make some more for its."

Where ere Hex end Ascil? More trouble next week

. 1978 Richard Forsyth, Rair Timesharing

PRODUCT NEWS

Stopping loss of memory

A COMPUTER system can remain netive without ioss of memory in the ovent of a mains supply feilure using the Trin SP692 power supply from Trio Laboratories.

Trio Laboratories.

The SP692 cnn provide threo outputs — 5 voits at 100 emps, S voits at 18 emps and 12 to 15 voits at 8.5 emps. If there is a noins failure the last two outsuts con be maintained by a battery which is immediately cut in. This supplies power to a AC/

DC converter.
Trio pointed out that this technique of reducing the power capacity means that the battery power require-ment is only 268 watts. The SP692 measures 8 × 5.25 × 23.1 inches.

Trio Laboratories Ltd (CW), Grove House, Grayshoit, Hindhead, GU28 6LE Tel: Hindhead (042 873)

APL VDU

Spray etcher for printed circuit boards

NOW ovoilable in the UK from P8 Electronice (Scational) is a single- and double-aided apray etclier that is designed for in-house production of professional standard printed circuit boards and for small batch rune.

MICROPROCESSOR and

perforator-only varelon. The Model RAR 6085 is 9

reader / perforator for byte-perallel operations, while the PRP 8050 is a perforator only version of the 8085

Nemed the BTE 202, it can etch single- or double-sided boards up to 12 x 12 x ½ inches in size in under three minutes. The four gallons of etchant in its aump is held at a constant temperature of 120°F in a Titanium 1,000 watt Twin-sided menifolde dis-Paper tape peripherals

The reader in each model can read standard 5. 7 or 8-chennel tape in both direccommunications systems ere tions and can elso hendle 8 or 8 channal typesetter teps. The perforator operates at 50 oreas for a range of paper tape peripherals from Gintrom-Ellinor. chps. The transmission retes for cending data vary from 110 to 9,600 baud, while The Model RAR 8051 la e sader/perforator with an RS. 232C aeriel Interfece, while the RPR 805t is a

Sintrom Eilinds Ltd (CW), 14 Arkwright Road, Reading, RG2 018 Tel: Reading (0784) 25464

Heavy duty punch

APL VDU

A MICROPROCESSOR powered APL / Ascil 'vidao terminal with features' thet include software controlled display 'psylitin ing Is now available from human usesigned Systems ine.

Called Concept APL it provides full APL overestrike cepability 'along with taxt editing, line drawing, graphics and use 1 19 function kew.

The 'sholly tan's educated systems in the capture of some concept apl costs six along manifeles of 50.

Human Designed Systems in the language of the control of a language in a part of the control of the con

vided for jobs that mey regulated for jobs that mey regulated for jobs that mey regulated for jobs that mey distributed for jobs that mey distributed for jobs and if any of the 28 nutriches are not required, the distributed for jobs the jobs of t

defrator, simply putter the profession and a depth setting operation and a depth setting control ad uses the distance of the pinched holes from the single edge.

Business Aide Lad. (CW) 2.
Whitey Avenue, London, NVI II 780) rel, illustrate to 1

Twin-sided menifolds distribute a random etch pattern against both sides of the verticelly-held board almultineouely. A built-in timer allows the user to set precise timing cycles and will automatically cut all power to the etch pumps at the end of any pre-set cycle time.

Internal safety switching prevents operation by cutting all power until the seethmush lid is firmly in place. all power until the sectionum in the section in section in the sec the receive reles range from 110 to 1,200 baud.

On the move

The London office of Geest Minicomputer Systems has moved to larger accommodation at Suite 4: London Fruit: troller, which can handle up Exchange, Brushfield Street; to eight drives at \$11,390 sach; London, El 6HB, Tel: 01.377; is compatible with those used on earlier systems, the new



Hewlett-Packard's 120 Megabyte disc drive.

120 Mbyte moving head disc drive FROM Hewlett-Packard is a diacs can be mixed in any 120 Megobyte moving head combination.

120 Megobyte moving head disc drive which, although compatible with the HP 3000 computer system, cen be edapted for other manufac-

edapted for other manutac-turers eystems. The HP-7925, Its Named the HP-7925, Its the usual measure of disc memory speed, is 25 milliseconds. Data is trens-ferred at either 7.5 Megabits or 9.375. Megabytes per

can be recovered under pro-gram control.

The packs cen operate in temperatures of between 10 and 40 C (50° and 104°K).

Gui, the putters "at a 100 quoted at between 90 and 120 days.

Hewlett-Packard Ltd (CW), King Street Line, Winnerst, Wokingham, RG11 SAK, Tels. 8734-784774.

One surfeca of the peck

Power supplies

COLLEGE and university lectronic laboratories could be interested in an instrument costing £198 that provide es-sential power supplies and digital aignale for electronic circuit development.

Called the Pulse generator and power supply instrument, it eliminates cluttered arrays of bench units eccording to its manufacturer, Mechtric En-

it provides three power supplies — TTL, variable C-MOS and balanced of erational amplifier supply. The pulse rate can vary from 2.2 seconds to 200 nanoseconds, while the pulse width can range from 1.1 seconds to 100 nanoseconds and is limited by the pulse rate setting. Other features include trigger out-In two phases. It measures 435 nim wide × 90 mm high × 260 mm deep.

Mechtric Engineering Ltd (CW), 12 Brunel Road, Manor Trading Estate, Benfleet, Es-sax, SS7 4PS. Tal: South Benfleet (03745) 59131.

Digitiser

One surfece of the peck carries servo information for the track-follower head actusting mechanism. Error correction code herdware is standerd and marginally recorded data — which can arise when the clock and data up slightly out of phase — can be recovered under program control. USERS of Monroe 1800 series USERS of Monroe 1800 series programmable calculators could be interested in the GP-3 spine diguiser which is now available from the Science Accessories Corp.

The GP-3 comes with an interface for the 1800 and can convert graphice information into bloary or binary coded deals. Additional convertion of the convertion o

Science Accessories Corp (CW), 970 Kings Highway West-Smuthbort, Connecti-cut, 98496, USA, Teli (916), 983) 255 1536.